ODICAL ROOM
RAL LIBRARY
OF MICH.

NOV 6 1930

STEEL

For forty eight years—IRON TRADE REVIEW

November 6, 1930

COLUMBIA service is a very human thing. Its true worth to an organization cannot be measured by price. It lies back of the quoted price and the contract, in the friendship, knowledge and experience of COLUMBIA key men. When a concern places its business with us a link is established with a group of men whose sympathetic cooperation is limited only by the extent to which they are permitted to serve.

Edward L. Parker
President

COLUMBIA

COLD FINISHED BARS AND SHAFTING

WARD-HOUSE SERVICE

Is Available From Eight Ward-Houses of

EDGAR T. WARD'S SONS CO.

(DIVISION OF COLUMBIA STEEL & SHAFTING COMPANY)

Boston, Buffalo, Philadelphia, Newark, Cleveland, Detroit, Milwaukee, Chicago

The World's Largest Distributors of Fine Steel Products

INTELLIGENT LAYOUTS—THE SOURCE OF SUBSTANTIAL SAVINGS

From the point of view of plant layout, the methods of processing, handling and selling the heavy tonnages involved in by-product coking, offer large rewards for intelligent planning. In most cases Koppers can reduce this planning to the exact proportions necessary for the lowest operating costs.

We will be glad to have you consult our engineers on your problems of new or additional coke and gas capacity.

BECKER OVENS

KOPPERS EQUIPMENT

KOPPERS OFFERS: Becker Type Oven Plants . . . Benzol Plants . . . Gas Producers . . . Water Gas Plants . . . Liquid Purification Plants . . . By-product Equipment . . . Material Handling Plants . . . Phenol Removal Plants, Etc.

KOPPERS CONSTRUCTION CO.

KOPPERS BUILDING **PITTSBURGH**

Vol. 87, No. 19, Nov. 6, 1930, issue of STEEL, published weekly at Cleveland, O. Entered as second class matter at the post office, Cleveland, O., under the act of March 3, 1879. Subscription $6 a year in U. S. and Canada; foreign £2:0:0; single copies 25c.

EDITORIAL STAFF
E. L. SHANER
EDITOR
ASSOCIATE EDITORS
E. C. BARRINGER
A. J. HAIN
G. H. MANLOVE
E. F. ROSS
J. D. KNOX
W. H. LLOYD
GUY HUBBARD
New York
E. C. KREUTZBERG
B. K. PRICE
H. R. SIMONDS
Pittsburgh
W. G. GUDE
Chicago
F. B. PLETCHER
Washington
L. M. LAMM
London
VINCENT DELPORT

STEEL

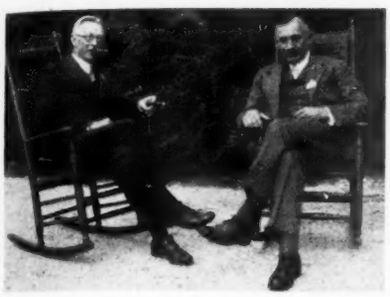
Published Every Thursday by

PENTON PUBLISHING CO.
PENTON BUILDING, 1213 WEST THIRD ST., CLEVELAND, O.

C. J. STARK, *President* J. D. PEASE, *Vice President*
F. V. COLE, *Secretary*

ADVERTISING STAFF
G. O. HAYS
BUSINESS MANAGER
New York
J. F. AHRENS
E. W. KREUTZBERG
Pittsburgh
S. H. JASPER
C. B. HUMPHREY
Chicago
L. C. PELOTT
C. A. WARDLEY
Cleveland
JOHN HENRY
R. C. JAENKE
F. F LIGHT, *Circulation Manager*

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE



Charles N. Fitts, president, American Institute of Steel Construction (left) and Otto von Halem, director, German Steel Syndicate. See page 23.

THIS WEEK:

IN 1904 the value of die castings that were marketed in the United States was slightly less than $1,000,000. In 1929 gross sales were estimated at $40,000,000. The making of die castings became an "industry" 25 years ago; today there are 125 manufacturers. An authority on the subject says in the article beginning on page 47 that the art and technique of die casting has not kept pace with progress made in competitive metalworking lines, such as in foundry practice. The next few years are to witness a tremendous growth of the industry, due to the determination of makers to standardize.

STEEL is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association

BRANCH OFFICES:

New York	220 Broadway
Chicago	Peoples Gas building
Pittsburgh	Oliver building
San Francisco	Alto building
Washington	National Press building
Cincinnati	Schmidt building
London	Caxton House, Westminster, S.W.I.
Paris	9 Rue de Londres
Berlin	Dahlmerstrasse 64 A, Lichterfeld-West

Subscription in the United States, Canada, Cuba and Mexico $6 per year; in Great Britain and European countries £2:0:0.
Entered as second class matter at Post Office at Cleveland under the Act of March 3, 1879.

Copyright 1930 by the Penton Publishing Co.

CONTENTS

November 6, 1930

THIS WEEK IN STEEL 21

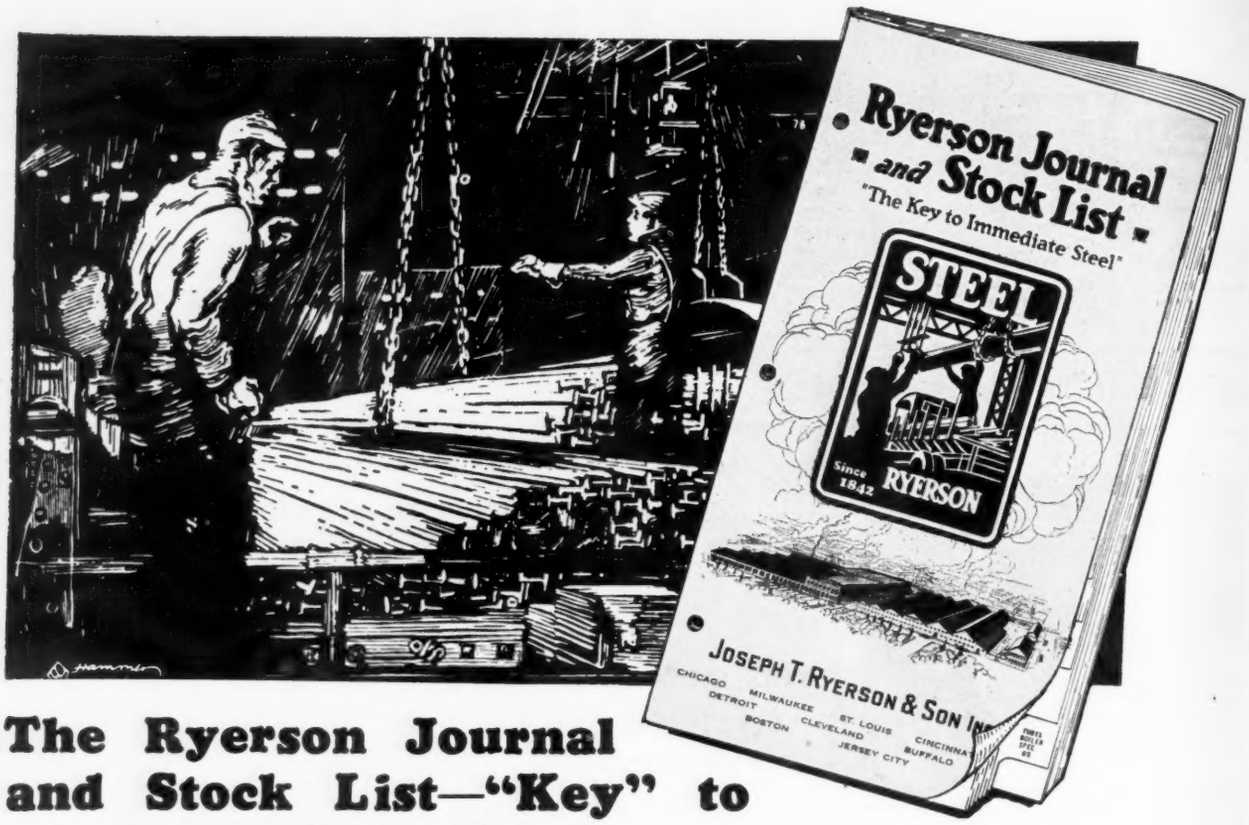
Work of Steel Constructors Is Gaining Momentum 23
Modernize Business Methods; Regard Rights of Others—By James A. Farrell 24
Western Steelmakers Move To Reopen Rate Case 25
Steel Industry Protecting "Its Own" Against Unemployment 26
Merger Date Again Extended; Arguments Continue 27
Bethlehem Incurs Deficit; All Steel Earnings Shrink ... 28
Ask for 50 Per Cent Rise on Pig Iron Duty 30
Pig Iron Output Drops Drastically 31
1929 Scrap Melt Is 30,000,000 Tons 33

Industrial Men in the Day's News 32
Obituary 34
Here and There in Industry 35
News of Steel Industry in Pittsburgh District 36

EDITORIAL—A Good Pattern for Trade Promotion 38
THE BUSINESS TREND—Uncertainty Still Dims Business Outlook 39

Standardized Die-Casting Alloys and Machines Aid Industry—By Charles Pack 47
Cast Pipe To Carry Telephone Cables Under Harlem River. 50
Improvement in Saw Steels Attributed to Alloys 54
Removes Scale from Surface of Metal Without Pitting—By H. R. Simonds 61
Steel Products Are Featured at Petroleum Exposition 63
High-Chromium Alloy Steels; Their Present Status—Part II—By E. C. Bain 66
Scanning the Technology of Steel 74
New Books Worth Reading 77
Machine Tools and Plant Equipment 81

MARKET SUMMARY 97
MARKET REPORTS AND PRICES 98-128
CONSTRUCTION AND ENTERPRISE 133
NEW TRADE PUBLICATIONS 138
WHERE-TO-BUY DEPARTMENT 139
ADVERTISERS' INDEX 184



The Ryerson Journal and Stock List—"Key" to Immediate Steel

With this book on your desk, you have the key to more than 10,000 steel products—more than 175,000 tons of steel. You can draw on these stocks almost as quickly as you can requisition your own storeroom. Shipment is immediate.

Use the Ryerson Journal and Stock List as your inventory record. Then you will have no capital tied up—no carrying charges—and all the steel you can use, just when you need it.

If you do not have the current copy, write us; it will be mailed at once.

Here is a partial list of the many items in stock for immediate shipment:

- Bars
- Structurals
- Rails
- Plates
- Sheets, Blk. & Galv.
- Sheets, Full Finished
- Refined Iron
- Turned, Ground and Polished Shafting
- Screw Stock
- Strip Steel
- Rivets and Bolts
- Boiler Tubes and Fittings
- Welding Rod
- Forging Bars
- Babbitt Metal
- Allegheny Metal
- Alloy Steel
- Tool Steel
- Concrete Reinforcing
- Firmtread Plates
- Small Tools
- Machinery, etc.

JOSEPH T. RYERSON & SON INC.

Plants: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City

Representation in: Minneapolis, Tulsa, Rockford, Kansas City, Houston, Dallas, Newark, New York, Denver, Los Angeles, San Francisco

RYERSON

STEEL-SERVICE

Volume 87 Number 19

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

TUESDAY'S elections should have a twofold effect upon the business situation. First, the passage of city and county bond issues totaling many millions of dollars matures a large number of public projects, although some, unfortunately, cannot be expedited sufficiently to lend needed prompt assistance to labor and materials. Second, after the diversion of public attention and newspaper space to political campaigns, only the post mortems remain this week, and a more temperate state of mind is now possible. . . . For one thing, efforts of the administration at Washington to stress unemployment relief may regain first-page prominence. It will be recalled that after the stock market collapse a year ago the President summoned leaders of industry to bolster sentiment; many then thought the President had overestimated the shock, but time has proved his appraisal only too correct. Now, the President rather spectacularly seeks to focus attention upon unemployment; again some apathy is apparent, due no doubt to the overshadowing political situation and the widespread opinion that business is plumbing bottom. . . . Nevertheless, Colonel Woods, heading the government's commission, is making creditable progress in building up an organization, co-ordinating federal and local relief activities, and stimulating industry to stagger employment and proceed with work-giving construction and rehabilitation (Page 26).

Steel Carries on Quietly but Effectively

In steel, a seeming lack of enthusiasm for relief campaigns is neither apathy nor indifference. The industry, as aptly epitomized at the recent meeting of the American Iron and Steel institute, is maintaining wages, recasting jobs and generally carrying its labor through the present distress with less hardship than in any major depression; it is quietly caring for its own. . . . For example, the United States Steel Corp., whose ramifications blanket 40 per cent of the steel industry, through its welfare associations and employes' clubs is seeing not only that its employes possess the necessities of life but also that such thrifty virtues as life insurance and home and stock purchases are not discouraged (Page 26).

Shareholders, Meanwhile, Are Not Neglected

Equal solicitude for its shareholders has been displayed by the management in steel. Further financial reports for the third quarter (Pages 28 and 29) concluding the roll call of practically all important producers, reveal no reductions in dividends due to a poor third quarter, if the

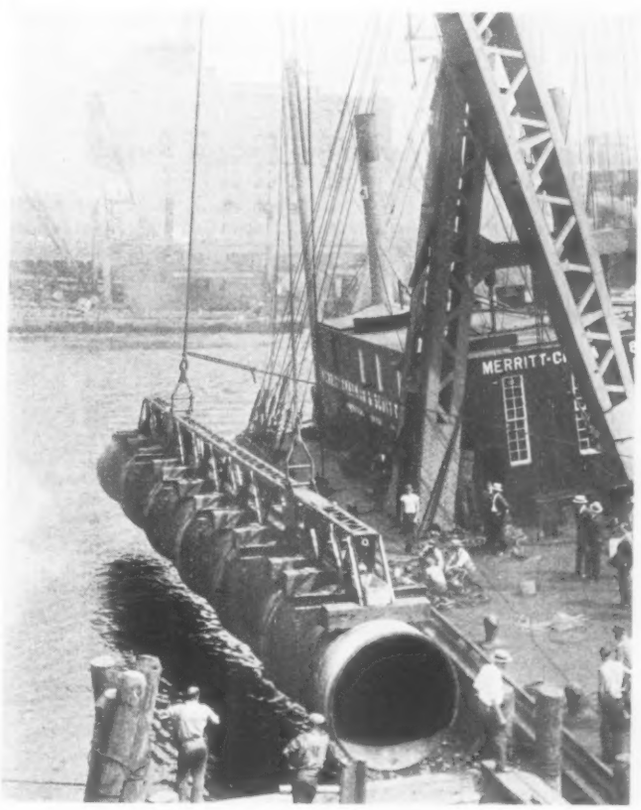


Photo courtesy Merritt-Chapman & Scott Corp.

What is believed to be the largest iron pipe ever cast—84 inches in diameter—being laid under the Harlem river, New York, for the New York Telephone Co. To lay the pipe, cast by the Warren Foundry & Pipe Co., the Merritt-Chapman & Scott Corp. counterbalanced the derrick.

omission of the extra on United States Steel common be excepted. In some cases, however, payment of third-quarter dividend was from surplus, an ominous portend for fourth quarter with low prices still applying to shrinking volume.

Low Prices To Tarnish Fourth Quarter

These unremunerative prices are the skeleton in steel's closet. At the recent institute meeting in New York a responsible executive referred to the possibility of fourth-quarter dividends being earned by only two corporations. In the markets, price is more discussed than volume (Page 97), and mills are most eager to stiffen before they are compelled to quote on first quarter business. . . . Not all producers are in the enviable position of certain sheet mills which are in process of shifting their output from common products to specialties (Page 36), on which there is a more comfortable margin. . . . Nor are prices all that is low. Eastern blast furnace interests, before the new tariff commission, want another story on the tariff wall. The present $1.12½ per ton duty should be increased the legal limit, or 50 per cent, they believe (Page 30). Thus far there is no opposition, except that a user of Swedish iron would exclude this grade from any advance.

Europe a Happy Family, Except Russia

"Come home; all is forgiven," is the invitation of the almost-defunct Continental Steel Entente. Belgium, Luxemburg and France have promised to cease dumping steel products in France, which in turn has agreed to pay a $4 per ton penalty—amounting at the present rate of production to almost $200,000 a month—on all output in excess of the entente's quota. And so the entente is reborn (Page 124). . . . Over this happy family Russia still casts its shadow. And in the United States, Chairman Fish of the house committee investigating communistic activity is predicting (Page 30) great pressure upon the next congress for an embargo on Russian imports. . . . At its convention in Washington next week (Page 30) the American Manganese Producers association will discuss chiefly the influx of Russian ore, which is again on the increase.

Scrap Industry Surveys Automotive Field

As the automotive industry makes progress in its campaign to rid the highways of "junk" cars, the problem of scrapping these derelicts and marketing their metal compels solution. At Cleveland last week the Institute of Scrap Iron and Steel Inc. (Page 30) initiated an investigation to determine the best method of scrapping. It will be recalled that last summer the automotive industry approved the so-called Cleveland plan (Page 26, Sept. 11). . . . The scrap industry has grown up; no longer is it to be confused with the "junkie" and his ubiquitous wagon. According to the scrap institute's figures (Page 33), the consumption of scrap in 1929 approximated 30,000,000 tons—five-sixths of it by steelworks. But 1930 is not so good a year. . . . In the preparation of this tonnage, the torch is a useful ally. The Baltimore & Ohio railroad, turning the torch to a constructive purpose (Page 25), has completed an all-welded steel coal car.

Progress, from Conduits to Blooming Mills

In countless ways foundries aid in the many methods of communication. One hundred and fifty thousand telephones on the far side of the Harlem river, New York, will soon be connected to the outside world through conduits in the largest cast iron pipe ever made, 7 feet in diameter, and 614 feet long, placed on the river bed (Page 50). . . . The veil of mystery is being removed from die casting practice, and an industry with an annual production now valued at $50,000,000, is due for tremendous expansion in the next few years, with makers determined on standardization of materials and methods (Page 47). . . . Manual skill in adjusting blooming mill rolls will be at a discount if an automatic screwdown control comes into general use, affording unvarying uniformity in roughing down ingots (Page 70). . . . Wooden derricks in the oil fields are giving way to those made of steel, a petroleum exposition in Tulsa, Okla., clearly indicating this (Page 63). . . . Because plain carbon tool steel does not lend itself to heat treatments which impart high elastic limits sawmakers are using alloy steels (Page 54).

Dull, Sinking Sensation for Pig Iron

A net loss of 15 active blast furnace stacks in October brings the total as of Oct. 31 down to 111, out of 310 in the country, the smallest number in blast at any time in the past nine years. The daily rate of output declined 8.2 per cent from that of September (Page 31) . . . Western trunk line iron and steel manufacturers petition the interstate commerce commission for a reopening of its investigation in class one rates, claiming the commission's original order precluded consideration of iron and steel commodities (Page 25) . . . The American Institute of Steel Construction now is engaged in 21 major activities, with 218 member companies, their work and influence continually gaining momentum (Pages 23 and 38) . . . The general business outlook still is obscure (Page 39) . . . Expiration date for the Bethlehem-Sheet & Tube merger contract again is extended, to Dec. 15 (Page 27). . . . Reports are current that Bethlehem Steel Corp. is planning to expand its structural activities by acquiring a number of fabricating shops (Page 31).

Work of Steel Constructors Is Gaining Momentum

IN THEIR eighth and most successful annual convention, members and guests of the American Institute of Steel Construction last week at Pinehurst, N. C., participated in activities which undoubtedly will result in important benefits to the structural steel industry.

Counseled by speakers of highest authority to modernize business methods and to adhere more closely to the policy of "live and let live," visitors to the convention went away with a better understanding of necessity of avoiding destructive competition. They also listened to a well balanced program of technical and economic discussions, which not only demonstrated the broad scope of the institute's activities, but also revealed the great potential markets for structural steel which await development.

◆ ◆ ◆

IMMEDIATE action resulting from the convention was apparent in the decision on Friday to hold architectural competitions in the design of steel residences; authorization of a committee to draw up standard specifications for steel highway and railway bridges; and definite approval of the proposal to celebrate the fiftieth anniversary of the first skyscraper in 1934 at Chicago.

All present directors of the institute were re-elected. The next convention will be held next October at White Sulphur Springs, W. Va.

The high point of the Pinehurst meeting was the annual banquet held Thursday evening. As toastmaster, Charles N. Fitts, president of the institute, read numerous telegrams and cablegrams from high officials which indicated the prestige the institute has won for itself both at home and abroad.

Investments in Canada Grow

In an address devoted largely to a review of business conditions in Canada and of the cordiality of relations between the Dominion and the United States, E. W. Beatty, president, Canadian Pacific railway, Montreal, referred to the growth of American investments in Canada, stating that at the present time 57 per cent of all foreign money invested in the Dominion is from the United States.

James A. Farrell, president of the United States Steel Corp., spoke on "The Economic Development of the Structural Steel Industry." At times he digressed from his prepared remarks, which are presented elsewhere in this issue, to emphasize various points relative to present problems.

In a brief address punctuated with numerous stories for the purpose of driving home economic truths, E. P. Thomas, vice president, United States Steel Corp., discussed several aspects of the present business situation.

One of the most valuable addresses presented before the institute in its nearly 10 years of existence was that entitled "The True Economy of Highway Bridge Design," by T. W. Dodd, president, St. Joseph Structural Steel Co., St. Joseph, Mo.

During 1928, according to Mr. Dodd, state and local governments in the United States, exclusive of cities, spent $1,554,000,000 on highways. Of this amount $818,000,000 went for roads and bridges; $419,000,000 for their maintenance; $248,000,000 for highway debt service and the remainder for miscellaneous expenditures. Twelve per cent of the $818,000,000 was for bridges.

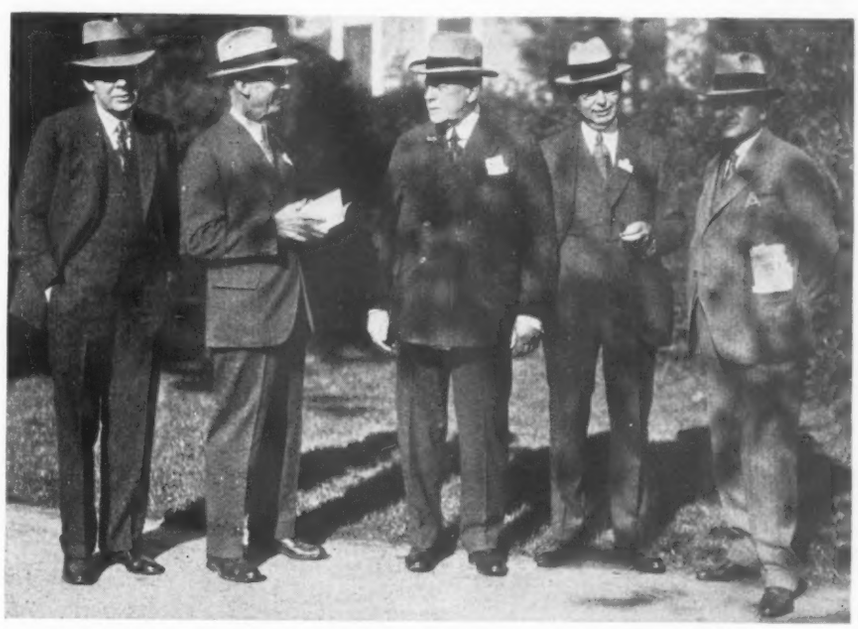
With these statistics to show the importance of economy in bridge construction, Mr. Dodd proceeded to outline six studies of bridges that actually have been built. He showed how alterations in design, utilizing structural steel to better advantage, would have effected savings ranging from 3.39 to 24.2 per cent.

In conclusion, Mr. Dodd said: "I think steel is a quality product, and where it can be properly used it is the best and cheapest material for bridge construction, all things considered. We may know it but the public and some of the engineers do not. There are possibilities for the steel industry in this field."

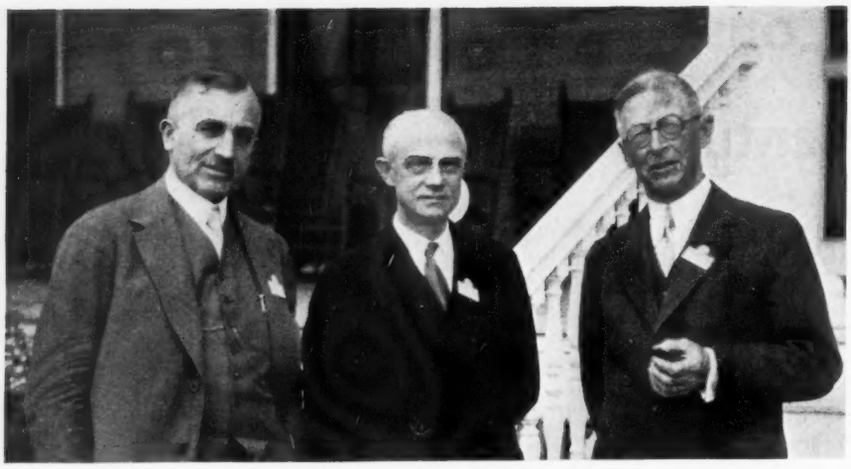
Seek More Beauty

P. H. Wood, Converse Bridge & Steel Co., Chattanooga, Tenn., proposed a number of interesting methods for beautifying simple highway spans. "If we are to build bridges of of outstanding beauty," he said, "why not adopt a tubular section for an arch rib or a top chord section? . . . . Why not use more than one color in field painting? . . . A variation in effect might be achieved by applying stainless steel or aluminum alloy sheets to some of the principal members."

An address by Edward W. Stearns, assistant chief engineer, The Port of New York Authority, accompanied by motion pictures, was given close attention. Mr. Stearns described numerous details in the construction of the Hudson river bridge, including the elaborate plans for handling traffic at approaches, the construc-



STEEL PRODUCERS AND STEEL CONSTRUCTORS MEET
James A. Farrell and Eugene P. Thomas, president and vice president, United States Steel Corp., face camera with Charles N. Fitts, president A. I. S. C. and H. A. Fitch, Kansas City Structural Steel Co.



AN INTERNATIONAL THREESOME

Left to right: Herr Otto Von Halem, director, German Steel Syndicate, Dusseldorf, Germany; George E. J. Pistor, Hay Foundry & Iron Works, New York, who recently returned from a tour of European steel centers; Charles N. Fitts, New England Structural Co., Boston, president of the A. I. S. C.

tion of piers and towers, arrangement of the anchorages, spinning of the cables and erection of the bridge floor structure.

The following figures from Mr. Stearns' address show the magnitude of the project:

Steel in each tower, tons	22,000
Field rivets in each tower	500,000
Load on each tower, tons	110,000
Main cables, diameter inches	36
Number of wires in each cable	26,474
Strands in each cable	61
Wires in each strand	434
Length of wire required, miles	12,000
Number of cables	4
Span of bridge, feet	3,500
Width of bridge, feet	120
Estimated cost	$60,000,000

That Europe is active in promoting the use of steel for building construction was indicated by the remarks of two speakers at the Wednesday evening session. George E. J. Pistor, Hay Foundry & Iron Works, New York, and treasurer of the institute, who recently returned from a tour of the principal countries of Europe, described his experiences abroad.

"There is one thing," declared Mr. Pistor, "with which European steel constructors are not yet fully acquainted. That is our American skyscraper. In the minds of the layman the skyscraper is nearly always looked upon as an extremely tall building, whereas we consider it merely a type of building. To us it is a skeleton frame building.

"Some rather tall buildings have been erected in Europe since the war. Many of the German cities have revised their building codes in order to take advantage of the steel frame construction. Even staid London has been working on a code revision. In Paris there is a definite move to rebuild, especially on the outskirts."

Otto Von Halem, director, Berastungsstelle fuer Stahlverwendung, Dusseldorf, Germany, outlined the work of his association in promoting steel consumption in Germany. He showed illustrations of numerous new structures, many of which reflect a type of architecture which is rather startling. Herr Von Halem also exhibited the German film "Stahl Ueberall."

C. O. Hadly, who as secretary, Trade Research bureau, Pittsburgh, has been engaged in market research activities for subsidiary companies of the United States Steel Corp., presented an address entitled "Co-operative Trade Research."

Charles N. Fitts, in his annual address as president of the institute, spoke briefly of the accomplishments of the organization and then emphasized the importance of the transition which is taking place in the industry.

Materials, Tools Improved

"The battledeck floor" he said, "has been adopted despite the apathy of most fabricators. Welding is gaining apace and is destined to play an important part in our industry. Alloy steels, developed for specialized uses, are affording builders something new to think about. These improved materials and tools are demanding radical revisions in our construction practices and our building codes. The steel construction industry cannot afford to stand idly and watch others develop these materials and tools."

Mr. Fitts also referred to recent changes in architecture and particularly to a new building in Chicago in which walls and floors will be of steel, all supported on a steel frame. "Its seems highly fitting," he declared, 'that our celebration of the fiftieth anniversary of the American skyscraper shall be sponsored by the steel construction industry and that it shall be held in Chicago."

Mr. Fitts also emphasized the possibilities in steel residences and urged the institute to lend its assistance "to those who are endeavoring

(*Concluded on Page* 58)

Modernize Business Methods; Regard Rights of Others!

BY JAMES A. FARRELL

President, United States Steel Corp.

IN THE last decade, the American Institute of Steel Construction has become a national institution. It has exerted a commendable co-operative effort in its program of standardization, simplification and the elimination of waste. It is asserted that your standard specifications have reduced the cost of building construction by millions of dollars annually by the employment of standard, uniform practices. Technical research is another activity of importance. The work in connection with wind bracing, welding, the proper fireproofing of structural steel, and other similar technical problems will lead to more intelligent and economical uses. Recognition should likewise be accorded your work with technical schools and colleges, educational meetings and your bureau of technical service and *Standard Handbook*.

Public opinion cannot be artifically manufactured. Advertising and publicity alone, no matter how skillfully manipulated, will not achieve anything of lasting value unless founded upon economic results. Public confidence can be maintained only if actual and authenticated achievements accompany announcements and claims.

The constructive work of your engineers, as shown by the record which they have established in promoting

From an address presented at the eighth annual convention of the American Institute of Steel Construction, Pinehurst, N. C., Oct. 30, 1930.

wider uses of structural steel, is commendable.

Interest is being successfully stimulated in new and practical uses for steel. Steel dams, steel framed buildings, battledeck steel plate floor construction, the steel hangar, and other similar enterprises result in a larger consumption of steel. Where excess plant capacities exist, increasing consumption will be the only panacea.

Other research problems are important, such as the abatement of noise in construction, the use of alloy steels, the economic height of buildings, and the demand for greater speed in erection occasioned by the consideration of the high cost of land.

There is naturally keen rivalry between reinforced concrete and structural steel. This rivalry is wholesome as long as it is constructive. There is a legitimate market for both materials. Both fulfill a public need. Each can properly claim economy, durability and safety. Practicability and sound engineering practice can and should determine the limitations of each. It should be the aim of the producers to stimulate fair consideration of both types of construction. In all promotional effort, including advertising and selling, the presentation of all claims should be governed by facts free from misrepresentations or misleading statements. Honest competition is a business stimulant; destructive competition undermines business stability and retards progress.

All industry throughout the world has been passing through a transition that has affected prices, largely

(*Concluded on Page* 60)

Immigration Drops 35 Per Cent Since Hoover's Order

Washington—First tangible effects of President Hoover's recent order prohibiting admission of aliens without means of support, as an employment protective measure, are shown in reports issued by the bureau of immigration. The number admitted in September was 17,792, compared with 28,020 in the month last year, a reduction of 36 per cent.

In the third quarter of the year 45,931 were admitted, compared with 70,866 in the period last year, a decrease of 35 per cent. In the third quarter immigration from Europe was reduced 27 per cent; from Canada 44.7 per cent, and from Mexico 72.9 per cent. The invasion from Mexico has practically ceased. Commissioner Harry E. Hull predicts a further general reduction.

Chicago, Milwaukee, St. Paul & Pacific railroad is building a $100,000 plant for renovation of oily waste from journal boxes at its West Milwaukee Locomotive shops.

Western Steelmakers Move To Reopen Rate Case

WASHINGTON — Petition was filed here Nov. 4 with the interstate commerce commission on behalf of the western trunk line iron and steel manufacturers asking for the reopening and reconsideration of the rate structure investigation in the western trunk line class rate case. The manufacturers ask also that a rehearing be granted and that the report of the commission be modified.

It is contended by the petitioners that "the present record does not support the findings and report made." Furthermore, the manufacturers aver, "the very order of the commission instituting the investigation into the class rate structure specifically precluded consideration of rates on iron and steel articles."

Claim No Need to Raise Rates

Conditions in the steel industry are extremely competitive and highly sensitive to slight variations in transportation rates is also contended. As indicative of the injury accomplished by the commission's report, says the petition, "we further assert that the list of iron and steel articles included in the report is wholly incomplete, insufficient and inadequate."

In conclusion the petitioners "further aver that there is no necessity for the drastic destruction of relationships between respective steel producing points and that in view of the insufficient and inadequate record upon iron and steel, your petitioners respectfully pray that the said proceeding be reopened."

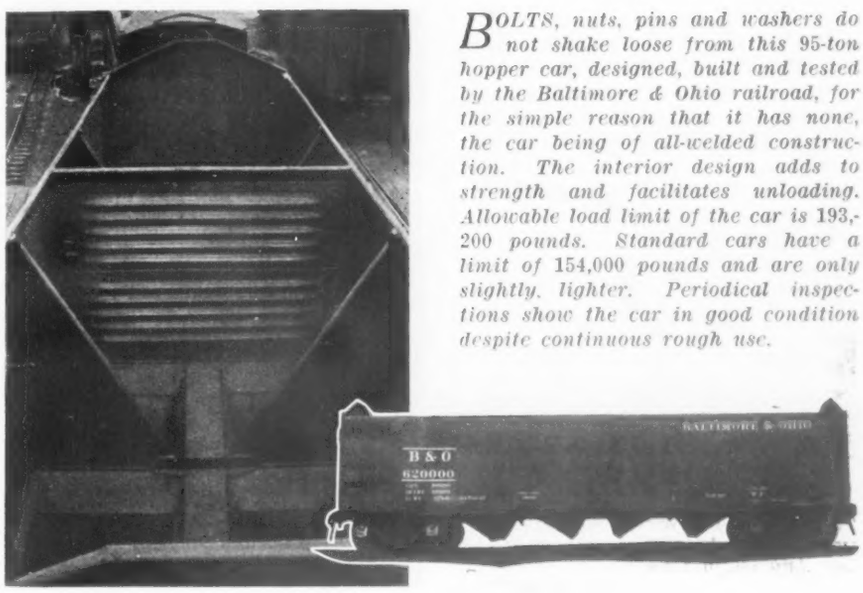
Mileage Rates Continue on Pennsylvania Steel

Steel producers and consumers in the Pittsburgh district continue to operate under the higher scale of freight rates on short hauls, instituted May 20, in contrast with the situation prevailing in the Midwest where the new scale was cancelled by the Indiana public service commission. The Illinois commission is expected to take similar action.

The new scale was protested against in the Pittsburgh district before the Pennsylvania public service commission but no decision is expected before Jan. 1. It is estimated that the new rates impose additional freight charges of about $5000 a day on the iron and steel industry in the Pittsburgh district. This makes a total bill of about $1,200,000 to shippers since May 20.

In Pennsylvania, the public service commission is forbidden by law to suspend rates before hearing. Hearings were unnecessary in Indiana and Illinois. The Pennsylvania commission is now receiving briefs from railroads opposing the plea of shippers that the increase be cancelled.

No Pieces Lost from All-Welded Hopper Car



BOLTS, nuts, pins and washers do not shake loose from this 95-ton hopper car, designed, built and tested by the Baltimore & Ohio railroad, for the simple reason that it has none, the car being of all-welded construction. The interior design adds to strength and facilitates unloading. Allowable load limit of the car is 193,200 pounds. Standard cars have a limit of 154,000 pounds and are only slightly lighter. Periodical inspections show the car in good condition despite continuous rough use.

Steel Industry Protecting "Its Own" Against Unemployment

NEW YORK—Steel employes so far have suffered less hardship than during any major depression in the history of the industry, and it is the firm policy of the leading companies to protect all of their regular employes from distress through the remainder of the present business ordeal.

This was the assertion today of one of the leaders in the industry, a man who is in a position to observe the trend of affairs, and whose judgement has considerable influence.

"It is up to the steel industry to see that none of its men is forced to call upon the public," said Myron C. Taylor, chairman of the United States Steel Corp.'s finance committee, at the recent meeting of the American Iron and Steel institute.

No Alarm Expressed

The management of other groups in the industry is convinced of the soundness of this principle. So far the nation-wide publicity given to unemployment has not created undue alarm in the steel industry, because it has been affected relatively less than many other lines. It decided early this year to divide employment; it has not cut wage rates, and the large companies have permanent organizations for tiding employes over periods of financial distress. The steel corporation especially has developed its personnel work to a marked degree of efficiency.

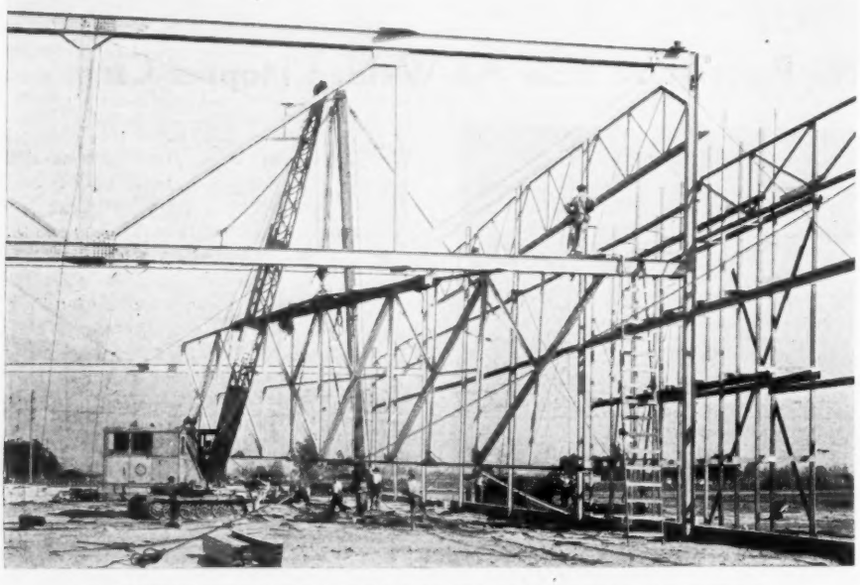
Practically all of the Steel corporation's subsidiaries have their men's clubs. A certain portion of the dues has been set aside for relief work. The clubs are operated by the employes although executives are members. One subsidiary head offered to contribute a stipulated sum to the club, provided the employes improved their safety record in a definite period; similar instances of mutual helpfulness are common.

Insurance Plans Used

Many subsidiaries have hospital units. Practically all employes enjoy the benefits of group life insurance. This insurance is paid for entirely by the men, the companies contributing only the bookkeeping necessary in the deduction of payments from pay envelopes.

It is assured that the employes' clubs will see that none of the insurance policies is allowed to lapse because of inability of an employe to meet payments through lack of employment or disability. Approximately 180,000, or 80 per cent of the total number of employes, are holders of this insurance, which now amounts to $240,000,000. Policies of this type usually call for $1000, although some are for $3000 or $5000 each.

Where men are buying homes through the Steel corporation plan, similar protection is afforded. Incidentally, this brings to light an interesting form of home-buying insurance, in effect at the Steel corporation subsidiaries. This provides insurance on a reduced scale, as the amount due on the mortgage is liquidated. In the case of death or total disability before full payment has been made, the insurance company immediately makes the necessary adjustment with a result that the man or his family has full title to the property. At present Steel corporation employes have $9,000,000 of this insurance.



LARGEST PRIVATE AIRPLANE HANGAR BUILT OF STEEL

The hangar for W. E. Boeing, now nearing completion, is 246 x 311 feet and required 400 tons of structural and sheet steel. It is located on United Airport, Los Angeles, a terminal subsidiary of United Aircraft & Transportation Corp., of which Mr. Boeing is chairman

Government Speeds Work; Industry Co-operating

Washington—Industrial leaders, government and state officials are daily notifying Col. Arthur Woods, chairman of President Hoover's emergency committee of employment, of their co-operation.

Twenty thousand additional men will be put to work and $50,000,000 will be spent in construction of merchant vessels during the next 12 months, according to officials of the shipping board. Under the Jones-White act the board will loan $15,000,000 to steamship lines to be used in the construction of 20 to 30 vessels.

Navy Launches Program

The navy department is pushing miscellaneous work, and will take bids in the next two months on construction to cost $3,000,000.

The department of the interior is ready to take bids for $60,000,000 to $70,000,000 worth of construction work on the Hoover (Boulder) dam in the Colorado river. Contracts for federal construction work of various descriptions now under way total $567,736,000, and $370,680,000 worth of work has been authorized but not contracted. Federal employes have been increased from 990,000 in January to 1,033,000 in October.

Among large new industrial projects pending or under way, of which Col. Woods has been informed, is that of the E. I. duPont de Nemours & Co. In addition to a $25,000,000 building project already begun the company plans to crowd into the next six months repair and replacement work at its 70 plants throughout the country work which ordinarily would be extended over a much longer time.

A. W. Shaw of Chicago, chairman of the committee on recent economic changes of the President's conference on unemployment, last week conferred with Colonel Woods as to continuing a program of research to reduce the extremes of business booms and slumps.

Announcement has been made that

Sewell Avery, president, United States Gypsum Corp., Chicago, will work with Colonel Woods' committee.

Chicago Voting on Bonds; Ten Per Cent Unemployed

Chicago — Chicago employment committees have been urging favorable action this week on 13 bond issues for public work to cost $28,520,000. It is stated some of this work can be started in 30 days, one job alone to employ about 4800 for six or eight months. Authority for a $60,000,000 city filtration plant to be started next year also is up for vote.

Chicago's unemployed are to be registered Nov. 8 at 325 public schools. It is estimated about 10 per cent of the bona fide wage earners of the city are unemployed.

Hawthorne works of Western Electric Co., Chicago, is shortening hours of operation to keep the maximum number of trained employes at work. Moderate reductions in working hours also have been made at the company's Kearny, N. J., works and Point Breeze plant at Baltimore. Edgar S. Bloom, president, announces the company's business now is substantially above 1929, and while the number of employes on Sept. 30, 1930 was 11 per cent under 1929, it was 45 per cent over 1928.

Pittsburgh Accelerating Public Construction Work

Pittsburgh — Awarding of construction and improvement work contracts is being pushed in Allegheny county. There has been an accumulation of work for which funds were provided by bond issues over the past two years.

Bids were opened last week on $2,500,000 worth of construction including the West End-Northside and South Tenth street bridges in Pittsburgh. Several hundred additional men will be employed in the two county parks.

Other public work that will employ additional men includes a large swimming pool, four large sewer jobs and approaches to the Elizabeth street bridge. The Pittsburgh postoffice is employing 1500 men to handle the Christmas mail. The city is distributing a $100,000 emergency fund for relief of destitute families.

Employment in Steel and Allied Lines Cut in August

Washington — Employment and payroll totals were reduced in September in the 203 iron and steel plants, 39 cast iron pipe foundries, 176 structural steelwork shops and 155 machine tool plants reporting to the bureau of labor statistics.

In the iron and steel establish-

(*Concluded on Page* 128)

Merger Date Again Extended; Arguments in Case Continue

EXTENSION to Dec. 15 of the expiration date for the Bethlehem-Sheet & Tube merger contract has resulted from an exchange of letters between officers of the two companies, pending the outcome of the suit to prevent the merger. The original date for termination of the contract was April 30, but it has been extended from time to time.

Power of fiduciaries such as guardians and trustees to vote Sheet & Tube stock in the April 8 stockholders' meeting in ratification of the merger, was argued by Howard Burns, attorney for the merger proponents, before Judge David G. Jenkins in Youngstown, O.

Election Causes Adjournment

Mr. Burns pointed out that 71 corporations gave such proxies through their officers, 51 by their presidents involving 118,000 shares, 15 others by other officers involving 5704 shares, and the remainder smaller amounts. The rights of such fiduciaries are clearly set forth by the Ohio statutes, and these were carefully followed in the voting, Mr. Burns said. Court adjourned for election day, Nov. 4.

Frederick H. Wood, Bethlehem counsel, extended his arguments into the sixth consecutive day last week. He gave considerable attention to the principal charges brought against Sheet & Tube directors by antimerger attorneys. These charges included "their failure in their duties through lack of information or bad faith." He said this was "an insult to the directors' intelligence and to their integrity and the charges have no foundation in facts."

"If they erred in judgment the error does not constitute fraud, nor can authority be found in the books where such error of judgment has been made the predicate for setting aside a contract either made by directors or ratified by the stockholders," Mr. Wood stated.

He argued that the adjustment in Bethlehem's depreciation and maintenance funds attempted by Ernst & Ernst, auditors for Cyrus S. Eaton, who is opposing the merger, resulted to the detriment of Bethlehem by $7,600,000. He charged these auditors ignored total capitalized items on Bethlehem's books amounting to $26,000,000 in five years that should have been credited to that company.

As to the Bethlehem executives' bonuses in 1929 which amounted to $3,400,000, Mr. Wood declared Sheet & Tube directors did not know about it at the time of their March 12 meeting when the merger contract was recommended to stockholders: but, as many had testified, it would have made no difference in their voting for the merger because they knew all the bonuses came out of earnings first.

"Youngstown Sheet &Tube Co. made a good bargain with the Bethlehem company in gaining terms of 11/3 shares of Bethlehem stock in exchange for one share of Sheet & Tube stock," said Mr. Wood.

J. Eugene Bennett, of Sheet & Tube counsel, followed and devoted his attention to the proxy fight. He argued for the legality of the proxies cast on 95,000 shares of Sheet & Tube stock sold between March 22, the closing date, and April 8, the date of the stockholders' meeting for ratification. Besides, there are involved 19,000 shares bought by Pickands, Mather & Co. between these dates. Merger opponents attack a total of about 200,000 shares voted at the April meeting, sufficient to jeopardize the merger since its proponents won by a margin of 58,000 votes.

Bethlehem Shareholders Sounded on Bonus

A minority committee of stockholders in the Midvale Co., Nicetown, Pa., is sounding out other shareholders who also have stock in the Bethlehem Steel Corp., as to their attitude on the Bethlehem bonus system. The committee suggests that action may be taken to protect them against a continuation of the bonus and possibly for a return of bonus money already paid.

Bethlehem purchased most of the assets of the Midvale Steel & Ordnance Co., paying 950,000 shares of Bethlehem stock. The heavy forging plant at Nicetown, however, was not part of the deal, the Midvale Co. continuing to own and operate it. Many of the Midvale stockholders still have their interests in Bethlehem. The minority committee was formed about five years ago, two years after Bethlehem acquired the Midvale Co. properties.

The committee has addressed a letter to certain stockholders in Bethlehem and Midvale asking their opinion as to the advisability of organizing a body for their protection, and if they wish the committee to function in such a capacity.

Bethlehem Incurs Deficit; All Steel Earnings Shrink

BETHLEHEM Steel Corp., Bethlehem, Pa., incurred a deficit for third quarter of 1930 after declaring regular dividends of $1.75 on preferred and $1.50 on common stock. Net profits applicable to dividends for the quarter were $3,783,425 compared with $7,691,495 for second quarter and $11,384,720 for third quarter of 1929. After deduction for dividends a deficit of $2,766,575 for the quarter results. The accompanying tabulation gives comparisons of quarters and nine months periods.

Third quarter net earnings is equal to 63 cents per share on 3,200,000 shares of common stock, compared with $1.86 per share for second quarter and $4.01 per share on 2,400,000 shares for third quarter of 1929.

Operating rate for third quarter was 54.6 per cent of capacity. In second quarter it was 69.3 per cent and for third quarter of 1929 it was 97.8 per cent.

E. G. Grace, president, said he looks for no immediate improvement. In fact, he said he would not be surprised if Bethlehem's operations in November were even slightly under the current rate of approximately 51 per cent. He said that his company has not yet felt any first quarter demand.

The most encouraging feature at the moment, he said, is the greater stability of prices. The company's billing prices for third quarter were lower than for the preceding quarter. However, Mr. Grace saw marked signs of stability within the past fortnight.

Considering the unusually light demand from railroad and automotive industries, the steel industry, operating at around 50 per cent, is doing well, he thought. The railroad and automotive industries alone, he said, consume normally 35 to 40 per cent of the steel produced.

Orders on hand at the end of third quarter, Mr. Grace said, had a value of $64,000,000, compared with $60,000,000, at the end of second quarter and $61,000,000 at the end of third quarter last year.

Commenting on the actual increase in the value of orders for third quarter, compared with a year ago, Mr. Grace said the decline in prices over the past year was more than offset by the business booked by Bethlehem's shipbuilding companies.

The Bethlehem president reaffirmed his belief in the importance of maintaining wage rates, asserting that steelworkers are already contributing enough in reduced working hours. If wages in the industry are maintained, business will come back just that much faster, once it starts upward, he said.

□ □ □

Jones & Laughlin Steel Corp., Pittsburgh, has declared regular quarterly dividend of $1.25 a common share, payable Dec. 1 to holders of record Nov. 13.

□ □ □

Youngstown Sheet & Tube Co., Youngstown, O., reports net profits for third quarter available for dividends were $1,708,979, after depreciation, taxes and interest. After preferred dividends are deducted, this is equivalent to $1.25 per share on the common. This compares with $2.17 a share for second quarter of 1930 and $6.55 a share for third quarter of 1929. For the first nine months, earnings were $7,036,030, equal to $5.34 a share on the common, compared with $16.67 a share for nine months of 1929 and $6.16 a share for the same period in 1928. Earnings for nine months cover dividend requirements for the year with 34 cents additional. Comparisons follow:

	1930	1929
Net after fed. tax..	$4,297,699	$9,814,925
Other income.....	497,069	890,101
Total income	4,794,768	10,705,026
Depr. and depl.	2,183,667	3,047,616
Interest	902,122	900,669
Net profit	1,708,979	6,756,741

□ □ □

Thompson Products Inc., Cleveland, reports net profit of $357,506 for nine months of 1930 against $1,138,263, in the first three quarters of last year.

□ □ □

Arthur G. McKee & Co., Cleveland, report net earnings of $453,998 on contracts taken during the nine months ended Sept. 30. This compares with $446,740 for the entire year of 1929. Net for the period was $5.37 a share on class B common stock. Third quarter earnings were $161,188, exceeding the average for the first two quarters.

□ □ □

Newton Steel Co., Youngstown, O., reports for third quarter, ending Sept. 30, net loss of $238,058, compared with net profit of $100,983 in the preceding quarter and net profit of $363,242 for first quarter of 1930. For nine months, net profits before depreciation but after interest charges and federal taxes, were $226,166.

□ □ □

Colorado Fuel & Iron Co., Denver, reports net loss, after all charges, of $774,793 for third quarter, compared with net profit of $204,087 after all charges but before federal taxes in the same quarter of 1929. Net profit for nine months of 1930 was $844,259 against $1,623,541 in the corresponding period last year. The company has declared a quarterly dividend of 25 cents a share, payable Nov. 25 to record of Nov. 10.

Bethlehem's Financial Statement for Quarter and Nine Months

	Third quarter 1930	Second quarter 1930	Third quarter 1929	Nine months 1930	Nine months 1929	Nine months 1928
Total income, including subsidiaries	$8,943,217	$13,025,558	$17,710,173	$37,815,281	$51,024,726	$30,834,739
Less interest charges	1,636,267	1,746,111	2,758,544	5,544,427	8,312,761	8,489,456
Balance	7,306,950	11,279,447	14,951,629	32,270,854	42,711,965	22,345,283
Less depreciation, depletion and obsolescence	3,523,525	3,587,952	3,566,909	10,718,448	10,515,182	10,158,709
Net income	3,783,425	7,691,495	11,384,720	21,552,406	32,196,783	12,186,574
Preferred	1,750,000	1,750,000	1,750,000	5,250,000	5,250,000	5,092,500
Common	4,800,000	4,800,000	4,800,000	14,400,000	10,800,000	.....
Total	6,550,000	6,550,000	6,550,000	9,650,000	16,050,000	.....
Surplus for period	*2,766,575	1,141,495	4,834,720	1,902,406	16,146,783	7,094,074

*Deficit.

Declaration places common stock on a $1 basis compared to former $2 rate. Preferred dividend of $2 quarterly was also voted, payable Nov. 25 to record of Nov. 10.

□ □ □

Reliance Mfg. Co., Massillon, O., had net earnings after all charges for nine months of $202,483, equal to $2.53 a share in comparison with $506,164 or $6.23 a share last year.

□ □ □

Pennsylvania Coal & Coke Corp., New York, showed net loss of $58,718 in three quarters of the year, compared with net profit of $32,261 in same period of 1929.

□ □ □

United Engineering & Foundry Co., Pittsburgh, has declared its usual extra dividend of 35 cents and regular quarterly dividend of 40 cents a share, both payable Nov. 14, to holders of record Nov. 4.

□ □ □

United States Steel Corp., New York, has declared regular quarterly dividend of $1.75 a common share, payable Dec. 30 to record Dec. 1. Preferred dividend of $1.75 was declared payable Nov. 29 to record Nov. 3.

□ □ □

American Brown Boveri Electric Corp., Camden, N. J., reports nine months net profit of $48,234 compared with $560,618 last year. Net loss of $103,822 was reported for third quarter of 1930 in comparison with net loss of $131,586 in 1929.

□ □ □

Cooper-Bessemer Corp., Mt. Vernon, O., and Grove City, Pa., reports for the nine months ended Sept. 30 net profit of $759,933. Against unfilled orders as of that date totaling $2,158,412, for Sept. 30, 1929 the figure stood at $1,039,000.

□ □ □

Wheeling Steel Corp., Wheeling, W. Va., reports net earnings for third quarter of $304,374, which is 80 per cent less than the $1,775,381 available for dividends in third quarter, 1929, and is less than dividend requirements. A dividend of 50 cents a share was declared, which is half the previous rate. Net profit for nine months of 1930 was $2,655,954, compared with $5,912,919 for the same period in 1929. Comparisons for third quarters are as follows:

	1930	1929
Profit and federal tax	$3,220,890	$4,801,708
Repairs, maintenance	1,242,792	1,514,616
Balance	$1,978,098	$3,287,092
Depreciation	$1,103,817	$967,571
Depletion	154,354	113,632
Interest	415,552	450,506
Total	$1,673,723	$1,511,711
Net profit	$304,374	$1,775,381

□ □ □

American Radiator & Standard Sanitary Corp., New York, has declared quarterly dividend of 25 cents a share on common stock, placing shares on a $1 annual basis, compared with $1.50 previously paid. Regular preferred dividend was declared.

□ □ □

General Refractories Co., Philadelphia, earned $404,722 net in third quarter, equivalent to $1.35 a share. Third quarter of 1929 net was $2.19 a share or $657,082. Nine months: $1,786,238, or $5.95 a share, compared with $1,863,392, or $6.21 a share last year.

□ □ □

Granite City Steel Co., Granite City, Ill., reported third quarter net earnings of $129,818, equal to 44 cents a share, against $469,326, or $1.61 a share in September quarter last year. Nine months' net in 1930 is $689,159, equivalent to $2.36 a share, against $1,362,023 or $4.66 a share in the corresponding time of 1929.

□ □ □

L. A. Young Spring & Wire Co., Detroit, reports net profit of $1,301,538 for nine months, equivalent to $3.15 a share and comparing with $2,076,210, or $5.03 a share over the first nine months of 1929. For the September quarter of 1930 net profit was $220,884; in the same period of 1929 it was $551,885.

□ □ □

Timken Roller Bearing Co., Canton, O., reports for third quarter net profit of $1,167,630, or 48 cents a share, in comparison with $3,731,679, equal to $1.55 a share in the corresponding period of last year.

□ □ □

Budd Wheel Co., Philadelphia and Detroit, reports net profit of $298,892, equal to 26 cents a common share for third quarter. In the second quarter $511,519, or 50 cents a share, was earned and the company reported $459,999, equivalent to 44 cents a share in third quarter of 1929.

National Steel Completing $32,000,000 Expenditure

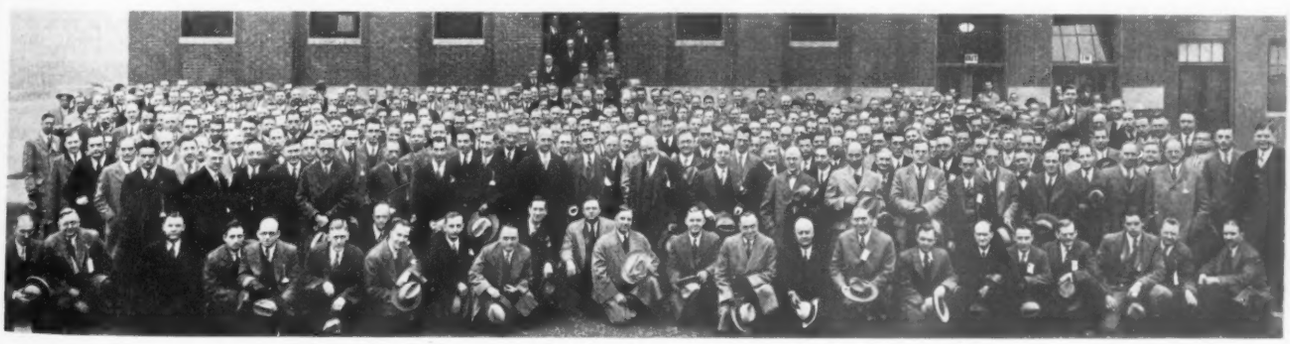
National Steel Corp., Pittsburgh, is completing the initial steps of its expansion program which has involved expenditures of over $32,000,000 this year.

The major project was erection of the $25,000,000 Great Lakes Steel Corp., unit at Ecorse, Mich., near Detroit.

Approximately $7,000,000 has been expended at the Weirton, W. Va., plant of Weirton Steel Co., another subsidiary, for additions to rail and shape mill, enlargement of by-product coke plant and other improvements.

Producing capacity of the Hanna blast furnaces at Detroit, controlled by National Steel, has been increased and ore reserves have been increased.

Midwest Steel Corp. will be the center of further expansion within the next two years. This subsidiary owns an 1100-acre tract near Gary, Ind., where a $50,000,000 steel mill will be built.



IRON AND STEEL ELECTRICAL ENGINEERS INSPECT NEW A. M. BYERS CO. PLANT

J. W. Marrinan, vice president of the Byers company, welcomed 400 engineers at the new plant at Ambridge, Pa., Oct. 23. Following luncheon there was a technical discussion on "Drives for Roll Tables." G. A. Kaufmann, electrical engineer, Jones & Laughlin Steel Corp., was chairman, and R. F. Sanner, assistant electrical engineer, Carnegie Steel Co., was secretary of the engineers' meeting

Ask 50 Per Cent Rise in Iron Duty; User of Swedish Iron Seeks Exception

WASHINGTON—No opposition developed at the hearing before the United States tariff commission last week to increasing the tariff rate on pig iron from $1.12½ to $1.68¾ per gross ton or the full 50 per cent allowable under the law. The hearing was the result of a senate resolution asking for information on pig iron.

There were only two appearances before the commission: H. M. Waybright, Boston, representing the Association of Eastern Blast Furnace Operators, and A. E. Walton, the Heppenstall Co., Pittsburgh, who appeared on behalf of his own firm, user of Swedish charcoal pig iron, asking for a special classification for this iron and not opposing any increase in the foundry pig iron tariff.

Others at the hearing but not testifying included; Robert E. Brooke, of E. & G. Brooke Iron Co., Birdsboro, Pa.; S. O. Hobart, Witherbee, Sherman & Co., Port Henry, N. Y.; Charles Hart, Delaware River Steel Co., Chester, Pa. and D. M. Eddy, Hanna Furnace Corp., Buffalo.

Mr. Waybright said almost 80 per cent of the entire production of pig iron in the United States is by steel companies for their own consumption, and is never "iron pigs."

Less Iron Imported

Importations of pig iron for the first eight months of this year, Mr. Waybright showed, have amounted to 81,528 tons, compared with 147,763 tons last year and 140,694 tons during 1928. There has been a material drop in importations since 1926, he pointed out, primarily due, he said, to action taken on complaint of American manufacturers, by the treasury department, in the form of a countervailing duty against pig iron from British India, and a dumping order against it from Germany. He called attention to the fact that both of these treasury department orders have now been suspended, and "today the only protection is that afforded by the import duty."

"The present reduced rate of importations," said Mr. Waybright, "we believe to be due solely to the industrial depression existing in this country and, from our past experience we predict that a revival of industry here will be followed by largely increased importations."

Mr. Walton asked the commission for a different classification for Swedish charcoal iron. He stated that this class of iron costs his firm at least 30 per cent more than a similar grade of iron bought in this country. Should the pig iron tariff be increased, and Swedish charcoal iron with it, Mr. Walton told the commission that it would mean a reduction in the operations and employment in the plants he represented.

He told the commission that his company could not use domestic charcoal iron. He stated specifically, however, that he did not object to an increase in foundry pig iron tariff rates.

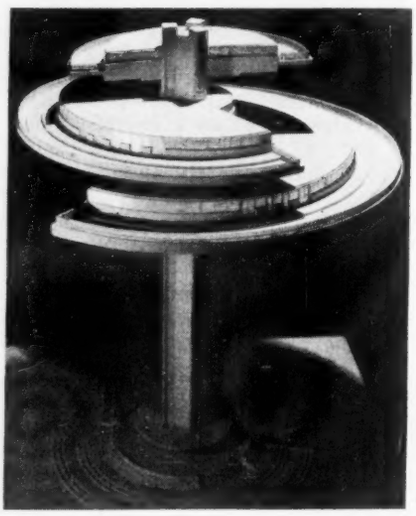
House «Red» Prober Sees Pressure for Embargoes

Washington—Rep. Hamilton Fish Jr., chairman of the house committee investigating communistic activities, expects a strong demand at the next session of congress for embargoes on soviet imports, including manganese.

"Soviet Russia, if it survives, can undersell any nation in the world in timber, pulpwood, manganese, oil, coal and wheat and other grains," said Mr. Fish.

"The Soviet government has confiscated all property and has reduced the peasants and wage earners to a position of serfdom that has no comparison in any civilized nation.

"Consequently, with unlimited resources at their disposal, at no cost to the government, and labor receiving a dollar and very generally much less a day, there is nothing to prevent the dumping of the commodities named upon foreign markets unless checked by tariffs and embargoes."



©Norman Bel Geddes

STEEL SUPPORTS REVOLVING RESTAURANT

One of the novel structures proposed for the Chicago World's fair in 1933 *is a restaurant building of steel, glass and aluminum on a slender steel shaft. The entire structure is to revolve slowly so that during a meal* 1200 *patrons could obtain two panoramic views of the fair grounds and city of Chicago, from an elevation of* 25 *stories. Designer is Norman Bel Geddes, New York*

Manganese Producers Meet in Washington, Nov. 11-12

Washington—Details have been completed for the third annual convention of the American Manganese Producers association at the Mayflower hotel, Nov. 11-12.

Assistant Secretary of War Payne and Maj. Alfred Hobley will talk on industrial preparedness and the attitude of the war department toward manganese. J. Carson Adkerson, president, will preside at the conference.

Hamilton Fish Jr., chairman of the congressional committee investigating communistic activities in the United States, and Dr. Edmund Walsh, school of foreign service, Georgetown university, will make addresses on the present Russian situation.

James W. Gerard, former American ambassador to Germany, will be toastmaster at the banquet held on the first night of the conference. Reports will be heard from the various manganese producing districts and talks will be made by leading men in the industry.

Seek National Plan for Scrapping Automobiles

Establishment of a national plan for scrapping old automobiles is the aim of a special committee of the Institute of Scrap Iron and Steel Inc., New York, which will work with representatives of automobile manufacturers and dealers. A conference of scrap dealers from various sections of the country was held at Cleveland Oct. 29 and a decision was reached to utilize the experience and machinery of the scrap industry in solving the problem of disposal of decrepit cars.

Doctoring of cars of scrap has almost been eliminated by efforts of the trade relations committee of the institute. It has handled 48 cases without the necessity of placing any before the federal trade commission. Co-operation of scrap consumers and members of the institute has resulted in adjustment of the cases.

The 1931 annual convention of the institute has been set for Cleveland, the second week of March.

Exports of cranes for nine months of 1930 totaled $1,913,000, compared with the abnormally large total of $2,223,000 for nine months of 1929.

October Pig Iron Production Shows Another Sharp Loss

WITH October production of coke pig iron making another sharp drop, operations were reduced to the lowest tonnage rate since September, 1924, and active stacks to the smallest number since October, 1921.

For six consecutive months activity has continued on the down grade and indications were to be found that bottom was close at hand. That 15 more furnaces should be blown out or banked, therefore, was somewhat of a surprise.

In the six-months period, the average daily output rate has slipped from 106,371 tons a day in April to 69,851 tons a day in October. The number of operating blast furnaces has been dropping over a period of seven months, starting with 184 in March and reaching 111 in October.

The average daily rate of 69,851 tons in October was a loss of 6042 tons, or 8.2 per cent, from the 75,893-ton level of September. The rate for October one year ago was 115,747 tons. In September, 1924, the last month in which production was lower, the daily rate was 68,454 tons.

During ten months of this year, daily production has averaged 91,810 tons, against 115,808 tons in all of 1929 and 103,365 tons in all of 1928.

Total production of pig iron in October was 2,165,374 gross tons, a figure which was 111,407 tons, or 4.9 per cent, short of the September aggregate of 2,276,781 tons. It is to be remembered, however, that October was a 31-day month and September a 30-day month. In October, 1929, a production of 3,588,146 tons was recorded.

For the 10 months thus far this year, output has amounted to 27,910,315 tons, a total which compares most unfavorably with the 36,270,846 tons for the corresponding period of 1929 and 31,157,201 tons for 1928.

Relating production to potential capacity, operations in October were 49.6 per cent, against 53.8 per cent one month before and 82.6 per cent in September, 1929.

Blast furnaces in operation on Oct. 31 totaled 111, against 126 Sept. 30 and 137 Aug. 31. This number of units making iron was the smallest since October, 1921, when only 95 were blowing. During October, three merchant furnaces were blown in and one was blown out; of the nonmerchant or steelworks class, 14 were blown out and one was blown in.

Stacks blown in during the month were: In Virginia: Reusens, Lavino Furnace Co. In Indiana: Gary No. 7, Illinois Steel Co.

Among the furnaces blown out or banked were: In Ohio: Hamilton, Hamilton Coke & Iron Co.; Mary, Sharon Steel Hoop Co.; Steubenville No. 1, Wheeling Steel Corp.; Youngstown No. 2, Youngstown Sheet & Tube Co.; River No. 2, Corrigan, McKinney Steel Co. In Pennsylvania: Donora No. 1, American Steel & Wire Co.; Adrian, Adrian Furnace Co.; Duquesne No. 2, Carrie No. 2, Clairton No. 3 and New Castle No. 3, Carnegie Steel Co.; one Eliza, Jones & Laughlin Steel Corp. In New York: One Buffalo, Hanna Furnace Co. In Maryland: Maryland F, Bethlehem Steel Co. In Alabama: Fairfield No. 6, Tennessee Coal, Iron & Railroad Co. In Indiana: Gary No. 12, Illinois Steel Co. In Michigan: One Detroit, Hanna Furnace Co.

AVERAGE DAILY PRODUCTION

	1930	1929	1928	1927
Jan.	91,573	110,742	92,113	100,043
Feb.	101,640	114,942	99,954	105,021
Mar.	104,930	119,662	103,199	112,326
Apr.	106,371	122,106	106,066	114,146
May	104,564	125,753	106,219	109,388
June	97,817	123,887	102,745	102,991
July	85,110	122,016	99,120	95,311
Aug.	81,455	120,845	101,193	95,183
Sept.	75,893	116,548	102,120	92,750
Oct.	69,851	115,747	108,824	90,710
Nov.	.....	106,081	110,155	88,728
Dec.	.....	91,513	108,702	87,039
Ave.	91,810	115,808	103,365	99,422

RATE OF OPERATION

(Relation of Production to Cacapity)

	1930†	1929*	1928‡
January	65.0	79.0	66.8
February	72.1	82.2	72.5
March	74.5	85.5	74.8
April	75.4	87.4	76.8
May	74.2	89.8	77.0
June	69.3	88.5	74.4
July	60.3	87.2	71.8
August	57.8	86.4	73.3
September	53.8	83.3	74.1
October	49.6	82.6	78.9
November	.....	75.8	79.8
December	.....	65.5	78.8

†Based on capacity of 51,490,790 tons Dec. 31, 1929; *on capacity of 51,069,895 tons; ‡on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

OCTOBER PIG IRON PRODUCTION

	No. in blast last day of month Oct.	Sept.	Total tonnage made Merchant	Nonmerchant
Ohio	22	27	67,776	380,378
Penn.	38	45	41,784	687,474
Alabama	10	11	109,952	37,792
Illinois	11	11	78,884	139,742
New York	6	7	61,927	51,648
Colorado	2	2		
Indiana	8	8		
Maryland	3	4	7,672	297,610
Virginia	2	1		
Wisconsin	0	0		
Kentucky	0	0		
Mass.	1	1		
Tennessee	0	0	15,135	81,113
Utah	1	1		
West Va.	3	3		
Michigan	3	4		
Minnesota	1	1	26,833	50,224
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	4,950	24,480
Total	111	126	414,913	1,750,461

Rumor Bethlehem To Get Structural Fabricators

New York—Reports are current that the Bethlehem Steel Corp. will acquire some important structural steel fabricators. In this connection are mentioned the McClintic-Marshall Co., Pittsburgh; and the Harris Structural Steel Co., Levering & Garrigues Co. and Hay Foundry & Iron Co., all of New York.

The McClintic-Marshall Co., largest fabricator mentioned, has four plants in Pennsylvania and one in Chicago, with an annual combined output of 400,000 tons. In 1928 it acquired the bridge works of the Bethlehem corporation, at Buffalo.

Asked concerning the reported merger, Eugene G. Grace, president of Bethlehem, would not comment.

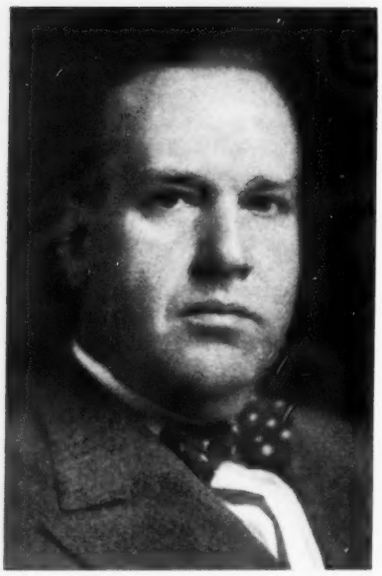
MONTHLY PRODUCTION

	1930	1929	1928
Jan.	2,838,751	3,433,028	2,855,515
Feb.	2,845,937	3,218,376	2,898,668
Mar.	3,252,822	3,709,518	3,199,175
April	3,191,119	3,663,167	3,181,975
May	3,241,477	3,898,344	3,292,790
June	2,934,508	3,715,104	3,082,340
July	2,638,441	3,782,511	3,072,711
Aug.	2,525,105	3,746,198	3,136,995
Sept.	2,276,781	3,496,454	3,063,593
Oct.	2,165,374	3,588,146	3,373,539
Total 10 mos.	27,910,315	36,270,846	31,157,201
Nov.	.....	3,182,420	3,304,656
Dec.	.....	2,836,917	3,369,784
Total	.....	42,270,183	37,831,741

Construction machinery exports in nine months of 1930 was 10 per cent larger than for the same period of 1929, which was an unusually heavy year.

Industrial Men in the Day's News

W. W. Holloway, New President, Wheeling Steel Corp.



TWENTY-TWO years in iron and steel furnish the background of experience which fits him for the presidency of the large Wheeling steel producer, and its subsidiaries.

HE has worked in turn for La Belle Iron Works, Wheeling Corrugating Co., Whitaker-Glessner Co., and since 1923 has been president of the Corrugating Co.

DURING the World war he served in the ordnance department, procurement division, at Washington, Buffalo and Cleveland.

AFTER more than two decades in steel and iron, William W. Holloway, president of the Wheeling Corrugating Co., largest subsidiary of the Wheeling Steel Corp., Wheeling, W. Va., reaches the presidency of the parent organization, equipped with a background of practical experience in all phases of steel production and distribution.

He was elected president of Wheeling Steel Corp. on Oct. 29 in succession to Isaac M. Scott, who as noted in STEEL of Oct. 30, retired to rest and travel. Mr. Scott had served in that office continuously since 1920, when Whitaker-Glessner Co., La Belle Iron Works, and Wheeling Steel & Iron Co., were merged under the name style of Wheeling Steel Corp.

Born in Wheeling, June 22, 1886, Mr. Holloway attended Linsly institute, Wheeling, and St. Paul's school, Concord, N. H. He then entered Yale university, and was graduated from its Sheffield Scientific school with the class of 1907. Shortly after he entered the open-hearth steel plant of La Belle Iron Works, Steubenville, O., where he rose to the assistant superintendency. He left in 1912 to join the Wheeling Corrugating Co. as assistant superintendent of its Martins Ferry, O., plant.

Three years later, in 1915, he was made general manager, and in 1916 became assistant to the president of Whitaker-Glessner Co. He relinquished these duties in 1917, when he was commissioned first lieutenant of the ordnance department, procurement division, United States army, and served at Washington, Buffalo and Cleveland. He was promoted to captain in January, 1918, and was discharged in April, 1919.

Returning to Wheeling, he resumed work as general manager, Wheeling Corrugating Co., and in 1921 was elected vice president. The next year he was elected president of Whitaker-Glessner Co., then operated as a subsidiary of Wheeling Steel Corp. Since 1923 he has been president of Wheeling Corrugating Co., which position he now leaves to become active head of Wheeling Steel Corp. and subsidiaries, including Wheeling Corrugating Co., Consolidated Expanded Metal Cos., Ackerman Mfg. Co., Tyler Tube & Pipe Co., and others. Mr. Holloway has been a director of the parent corporation since 1927 when he was chosen to fill the vacancy caused by the death of his father.

Mr. Holloway has always been active in civic projects and is a former president of Wheeling's chamber of commerce. He has played a prominent part in civic welfare work and civic betterments. He is a firm believer in outdoor recreation and during college days was a member of the Yale varsity football squad. He served as president of Wheeling Country club, and enjoys golf as opportunity permits.

MILTON T. CLARK, recently made president, Campbell Industrial Window Co. Inc., Pershing square building, New York, since 1928 was vice president, Truscon Steel Co., Youngstown, O., and for ten years was manager of its window division. Mr. Clark came from San Francisco, where he was chief of the bureau of architecture. He is credited with having planned San Francisco's city hall and many other public buildings. Previously Mr. Clark had been in the contracting business. Mr. Clark's new connection with Campbell Industrial Window Co. Inc., is owned by Campbell Metal Window Co., subsidiary of American Radiator & Standard Sanitary Corp.

□ □ □

John C. Chaffe has been elected vice president in charge of sales, Wrought Iron Co. of America, Commercial Trust building, Philadelphia. Mr. Chaffe had been assistant to the president.

□ □ □

Lee F. Adams, commercial engineer, General Electric Co., Schenectady, N. Y., has been awarded the manufacturers medal and purse for 1930, given under the James H. McGraw award. This recognition is

the result of "outstanding and unselfish service to the manufacturing branch of the electrical industry."

□ □ □

E. D. Pumphrey, who formerly was Detroit district manager for the Donner Steel Co., Buffalo, has been appointed Detroit district sales manager, Corrigan, McKinney Steel Co., Cleveland, with headquarters at 2343 Union Trust building, Detroit.

□ □ □

A. J. Johnston, executive vice president, Hickman, Williams & Co. Inc., Chicago, has been made assistant to the president of that company. He will remain at Chicago.

□ □ □

William E. Colley has resigned his position in the marine sales department, Westinghouse Electric & Mfg. Co., South Philadelphia, Pa., works to become sales engineer, Kingsbury Machine Works, Philadelphia.

□ □ □

Clarence L. Collens, president, Reliance Electric & Engineering Co., Cleveland, was re-elected president, National Electrical Manufacturers' association at its recent annual convention in Old Point Comfort, Va.

□ □ □

Paul L. Price, associated with Irving Iron Works Co., New York, for 19 years in various capacities, most recently as treasurer and general manager, has been made a vice president in charge of research and development. Mr. Price continues as chief engineer of the company, which manufactures steel mesh, grating, flooring and steps.

□ □ □

A. H. D. Altree has resigned as vice president, American Bosch Magneto Corp., Springfield, Mass., effective Dec. 31, 1930, and will retire from active business. He has been with the company 21 years, the last 12 of which he served as vice president.

□ □ □

B. C. Palmer, special sales engineer, Ohmer Fare Register Co., Dayton, O., since 1927, has been transferred to Chicago to supervise the business offices there and to continue as general sales manager for recording devices, etc.

□ □ □

A. M. Cornell has resigned as works manager of plants at High Bridge, N. J., and Easton, Pa., for Taylor-Wharton Iron & Steel Co., and will return to Chicago to engage in his own business.

□ □ □

Sam Laud was elected executive assistant to the president and Herman Altschul was made assistant to the president, General American Tank Car Corp., Chicago, at a meeting of the board of directors. R. C. Pierce was elected vice president in charge of engineering and research, and A. A. Selonke was made assistant comptroller. This follows the election of Lester N. Selig, formerly assistant to the president, who was elected president in succession to Elias Mayer, resigned, as noted in STEEL of Oct. 16.

□ □ □

E. S. Evans, president, Detroit Aircraft Corp., Detroit, has resigned, effective Nov. 1. He has been elected chairman of the board and will continue active in its management.

□ □ □

Daniel C. Jackling, mining engineer and president, Utah Copper Co., Salt Lake City, Utah, was presented the 1930 William Lawrence Saunders gold medal at the meeting Oct. 31 of

Milton T. Clark

the American Institute of Mining and Metallurgical Engineers. This medal is awarded annually by the institute for "achievement in mining" and was presented to President Herbert Hoover in 1928, and John Hays Hammond in 1929.

□ □ □

R. G. Adair, staff supervisor of safety and training, American Rolling Mill Co., Middletown, O., has been appointed assistant to the works manager of its Butler, Pa., plant. He has been with the Armco organization for almost 15 years.

Ohio Engineers To Meet at Battelle Institute

The Ohio section of the American Institute of Mining and Metallurgical Engineers will meet at Battelle Memorial institute, Columbus, Nov. 14. The program includes an afternoon technical session, inspection of the Battelle institute facilities, dinner and a technical session following in the evening. Dr. H. W. Gillett, director of the institute, will welcome the visitors and Dr. O. E. Harder, associated with Dr. Gillett, will discuss alloys of iron, their past and present uses. Subsequently a paper will be presented by Ralph Sweetser, American Rolling Mill Co., Middletown, O., dealing with old and new blast furnace practice.

Following an inspection tour of the Battelle institute, a dinner will be served at which the speaker will be William H. Bassett, president of the mining and metallurgical engineers group. He will speak on the subject of nonferrous metals. Later, H. Foster Bain, national secretary of the institute, will discuss minerals in the economic rehabilitation of Europe, and Dr. R. C. Allen, director of the same group, will speak on iron ore resources of Russia.

1929 Scrap Melt 30,000,000 Tons; New Processes Increase Relative Use

RESEARCH by the Institute of Scrap Iron and Steel Inc., New York, Benjamin Schwartz director general, into total tonnage of scrap used in the iron and steel industry indicates that about 30,000,000 tons represents the consumption in 1929. About 25,000,000 tons was consumed by makers of steel ingots and castings and the remainder by blast furnaces, iron foundries and miscellaneous users.

The figures are conservative and probably understate the total rather than the contrary. Figures were gathered from users possessing 78 per cent of the total ingot capacity of the country, according to figures of the American Iron and Steel institute. Actual consumption by this 78 per cent was 17,628,722 tons, giving a computed total of 22,600,000 tons for the entire industry.

However, the 22 per cent from which figures were not available has a greater proportion of open-hearth capacity and less bessemer than the 78 per cent. It also includes a larger percentage of electric steel production. Both electric and open-hearth processes consume a larger proportion of scrap than bessemer and thus the un-

counted 22 per cent of ingot capacity should use a higher proportion of scrap than those from which figures were obtained.

Computed totals for all steel ingot producers gives 22,600,000 tons of scrap as a total, with 14,236,100 tons produced in their own plants and used without going on the market and the difference, 8,364,800 tons purchased.

The report based on this research concludes that the tendency of the steel industry is toward a larger proportionate use of scrap as it develops. This process has been going on as the bessemer has been supplanted largely by the open-hearth and electric furnace, the former using a large percentage of scrap and the latter 100 per cent scrap. Production of steel by the latter process is growing steadily.

Girdler Sees Improvement Beginning Early in 1931

Tom M. Girdler, chairman-president of Republic Steel Corp., Youngstown, O., says current steelworks operations at approximately 50 per cent of capacity indicate that activities in the steel industry have touched bottom.

"There are many signs," Mr. Girdler continued, 'that this rate will be maintained or improved during the last two months of the year.

"It is important to note that the country's needs for steel in this year of depression have been far greater than in the last great crisis of 1921. Output of steel ingots this year will approximate 40,000,000 tons, compared with 19,000,000 tons in the latter year.

"Business is now suffering from a state of mind which, in its unreasonable pessimism, is depressing prices and activities temporarily below normal levels. I expect a rational and sound recovery in prices and operations to get under way in the steel industry early next year."

To Merge Advance-Rumely

Chicago—Advance-Rumely Co., La Porte, Ind., directors have approved consolidation with the Indiana Farm Machinery Co., the latter an organization of the Advance-Rumely interests. The new company will be known as the Advance-Rumely Corp. to have capitalization of 500,000 shares of no par stock, which it is proposed will be exchanged for the preferred and common shares of the present Advance-Rumely Co.

Mining, oil-well and pumping machinery exported in nine months of 1930 was valued at $40,012, compared with $40,667 in the same period of 1929.

Obituaries

ADDISON H. Beale, president, A. M. Byers Co., Pittsburgh, since March, 1925, died unexpectedly in Chicago Oct. 28. He had left Pittsburgh the night before apparently in good health. Mr. Beale after leaving school was employed by various steel companies in minor capacities and about 1890 became open-hearth superintendent, Apollo Steel & Iron Co., the forerunner of American Sheet Steel Co. When in 1903 this interest with American Tin Plate Co. was merged to form American Sheet & Tin Plate Co., Mr. Beale left to become general plant manager, Eastern Steel Co., Pottsville, Pa., where he remained until 1907, when he was made district manager, American Sheet & Tin Plate Co.'s mills in Kiskiminetas valley, i.e., Vandergrift, Leechburg, Hyde Park and Saltsburg, Pa.

Addison H. Beale

He left in 1915 to become identified with Mark Mfg. Co., Chicago, and as general superintendent in charge of construction, he built and placed in operation its Indiana Harbor, Ind., plant. In the reorganization of May, 1922, the plant was taken over by Steel & Tube Co. of America, Chicago, and Mr. Beale became vice president in charge of operation. When that interest was absorbed by Youngstown Sheet & Tube Co., in July, 1923, Mr. Beale became president, Lebanon Valley Iron & Steel Co., Lebanon, Pa., remaining for about 10 months, until he was elected president of A. M. Byers Co. He was a member of the American Iron and Steel institute.

□ □ □

Adolph F. Gartz, 68, former treasurer, Crane Co., Chicago, died Oct. 29 in Altadena, Calif.

□ □ □

Robert A. Rouse, 45, sales manager, Continental Can Co., at Baltimore for many years, died there Oct. 28.

□ □ □

James Watt Kerr, 85, one of the founders of the Steiger & Kerr Stove & Foundry Co., 2201 Folsom street, San Francisco, died recently.

□ □ □

William A. Holmes, 59, for years president of Enterprise Iron Works, Indianapolis, died recently at Franklin, Ind.

□ □ □

Frank Zug, 66, treasurer, Ohio Iron & Steel Co., Youngstown, O., and director of Sharon Steel Hoop Co., Sharon, Pa., died recently.

□ □ □

Walter C. Stoneham, 68, treasurer, Federated Tool & Machine Co., and Stoneham Engineering Co., Dayton, O., died recently at Dayton.

□ □ □

William F. Hess, 39, general manager, National Aluminum Co., Cleveland, died suddenly at Akron, O., Oct. 30.

□ □ □

Charles M. Wales, 68, New York representative, Wheeling Mold & Foundry Co., Wheeling, W. Va., and who for many years represented Cleveland City Forge Co. and Otis Steel Co., Cleveland, in New York territory, died Nov. 1 at Englewood, N. J.

□ □ □

E. J. Campion, 52, superintendent, Canadian Steel Foundries Ltd., Montreal, Que., died at Cleveland recently. He was employed at 16 years by Nashua Iron & Steel Co., Nashua, N. H., and in 1897 became open-hearth melter for Benjamin Atha Steel Co., Newark, N. J. Nine years later he was appointed open-hearth superintendent, American Steel Foundries, Franklin, Pa., and for a time was with Ontario Iron & Steel Co. After several months he returned to American Steel Foundries but became identified with Canadian Steel Foundries Ltd., as assistant superintendent in 1917, and later superintendent.

Hits British Iron, Steel

Henry Ford, speaking recently in London, said the decision of the Ford Motor Co., Detroit, to build blast furnaces at its new English plant at Dagenham was prompted by inability to obtain the desired pig iron in England. He said difficulty was being experienced in obtaining in England steel and iron comparable to that used by the company in the United States.

Here and There in Industry

YORK Heating & Ventilating Co., Philadelphia, Carrier Engineering Corp., Newark, N. J., and the Brunswick-Kroeschell Co., New Brunswick, N. J., and Chicago, are being merged, negotiations having been practically completed. The three companies are large producers of unit heating and ventilating, air conditioning and refrigerating equipment. The merger will combine fifteen companies, five foreign, when subsidiaries are counted. These companies will retain separate entities under the holding company, which will be known as the Carrier Corp. It will conduct research, sales and engineering activities for the group. Assets are about $15,000,000.

□ □ □

Wrought Iron Co. of America has moved its headquarters from 725 to 1025 Commercial Trust building. Philadelphia.

□ □ □

Standard Semi-Steel Foundry Co., Springfield, Mo., has changed its name to Standard Electric Steel Castings Co.

□ □ □

American Steel Foundries, Chicago, has moved its miscellaneous sales department from the main office in Chicago to the Indiana Harbor, Ind., plant.

□ □ □

Illinois Wire & Mfg. Co., Joliet, Ill., is establishing a distribution center for New England at Waltham, Mass. It is erecting a plant, including a main building and storage building.

□ □ □

Inland Steel Co., Chicago, has added a new type of roofing sheet to its line of products. It embodies a new principle in protection, with a triple barrier against water, giving a maximum protection against severest storms.

□ □ □

Huffman Mfg. Co., Dayton, O., M. H. Huffman president, has bought the Holtson Mfg. Corp., Baltimore. Equipment of the latter is being moved to the Dayton plant of the purchaser. The Holtson company has been manufacturing fittings for gasoline stations, both retail and bulk.

□ □ □

Bacon-Hibbard-Eichman Inc., Cleveland, dealer in contractors' equipment, has changed its name to Hibbard-Eichman-Smith Inc. and has moved its headquarters from Central avenue to 999 Front street N. W. The change in name results from the addition of Harvey W. Smith as a member of the firm, becoming vice president and manager of the branch at Canton, O. The change in location gives three times the former space and railroad facilities.

□ □ □

Pennsylvania Engineering Works, New Castle, Pa., is making final shipment to the National Tube Co. at McKeesport, Pa., of its new duplex steel plant, consisting of three 25-ton converters, two 800-ton mixers and three 250-ton tilting open-hearth furnaces.

□ □ □

American Steel & Wire Co., Cleveland, has placed an order with the E. W. Bliss Co., Salem, O., for four 4-high stand rolls wtih 400-horsepower gear reduction drives and four with 250-horsepower gear reduction drives, for its Cuyahoga works, Cleveland.

□ □ □

Hill-Chase & Co., Richmond and Ontario streets, Philadelphia, has established at Philadelphia a stock of cold-drawn seamless steel tubing in all sizes from ⅛-inch to 10 inches outside diameter, available for immediate warehouse shipment. The company handles the production of the Globe Steel Tubes Co.

□ □ □

C. R. Talbott Co., Cincinnati, is making extensive changes in its warehouse plant, necessitated by a portion of the plant being wrecked to make way for a viaduct improvement. A new office building is being added, additional steel racks are being installed and extensive interior alterations are being made. A system of concrete drives gives ingress and outlet for trucks without turning.

□ □ □

Wheeling Corrugating Co., Wheeling, W. Va., has let a contract for a new warehouse at Briscol and Third streets, Philadelphia. It will be one story, brick, with 70,000 square feet of floor space. It now has a warehouse at 1234 Hamilton street, Philadelphia. The company is a subsidiary of the Wheeling Steel Corp., Wheeling, W. Va., and has warehouses in 12 principal cities.

□ □ □

Woodward Iron Co., Woodward, Ala., is erecting a pig casting machine at its blast furnace, with a casting house 67.5 feet wide and 175 feet long and leanto 55 x 100 feet. The casting machine is of unusual length, 175 feet. Ladles will be of 75-ton capacity and will be furnished by William B. Pollock & Co., Youngstown, O. The casting house is being erected by the Ingalls Iron Works Co., Birmingham, Ala.

□ □ □

Freyn Engineering Co., Chicago, has taken a contract from the Illinois Steel Co., Chicago, for three pressure-type Theisen disintegrator gas washers for fine cleaning of blast furnace gas from blast furnaces at South Works, Chicago. Carnegie Steel Co., Pittsburgh, has given the Freyn company a contract for two continuous stockline recorders for its Mingo Junction, O., works. Illinois Steel Co., Chicago, has placed an order for two stockline recorders for its South Works plant, making seven for that plant. Bethlehem Steel Co., Bethlehem, Pa., has bought an additional stockline recorder and eight electric roll heaters for its Sparrows Point, Md., plant. Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has bought from the Freyn company six electric roll heaters for its new sheet mills at Fairfield, Ala. This makes 20 of this type of roll heaters in plants of this company.

□ □ □

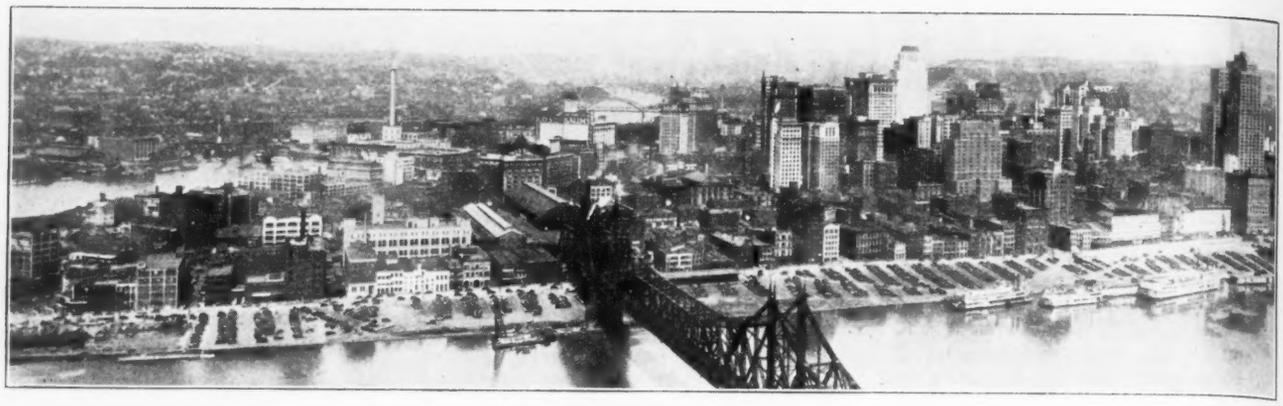
Campbell Industrial Window Co. Inc., owned by the Campbell Metal Window Co., a subsidiary of the American Radiator & Standard Sanitary Corp., has been organized with Milton T. Clark, former vice president, Truscon Steel Co., Youngstown, O., as president. Headquarters will be 1607 Pershing Square building, New York.

Organization of this company completes the group of Campbell Window manufacturers, which also includes the Voigtmann Metal Window Corp., Kalamazoo, Mich., and the Campbell Casement Window Corp., New York. In addition to handling various types of metal windows manufactured by the affiliated plants, the company will also distribute window hardware, mechanical operating devices and cast iron products including basement windows, coal chutes, chimney and ash pit doors, fire place dampers and ventilators.

Officers and directors, in addition to Mr. Clark, include:

Martin J. Beirn Jr., vice president and general manager of sales, American Radiator Co.; Harry E. Campbell, director and vice president, Campbell Metal Window Corp.; Donald M. Forgan, vice president and treasurer, American Radiator Co.; Rolland J. Hamilton, president, American Radiator Co.; Allston Sargent, president, Campbell Metal Window Corp.; Jack Williams, president, Campbell Casement Window Corp.; Frank P. Stubb, secretary; James W. Crabbe, treasurer and assistant secretary.

Mr. Sargent will act as chairman of the new company. Mr. Campbell will be a vice president, and Mr. Forgan assistant treasurer.



F. o. b. PITTSBURGH

PITTSBURGH

POOR business and depressed steel prices of 1930 are expected to stimulate the activities of producers, particularly the smaller ones, in the market for specialty products. Sheet and strip business in the common grades has been especially unremunerative this year. Since the peak prices of 1929 black sheets have dropped $12 a ton, autobody $14 and strip $5 to $8.

There have been intimations that some interests may abandon the production of the common grades of sheets, retaining business in the more profitable specialty items, although it is doubted whether the market for the latter is sufficiently broad to absorb all present facilities.

Most flat rolled steel producers in this district have entered the market for corrosion and heat-resisting steels. Allegheny Steel Co. has been one of the leaders in this respect and has advertised widely its Allegheny Metal. This company also is actively engaged in the production of electrical sheet stampings.

Several months ago Allegheny transferred the equipment of the Lamination Stamping Co. of Hartford, Conn., which it controls, to Brackenridge, Pa. This division produces the laminated stampings that form an important part in electrical equipment.

Stamping Parts at Mills Saves Haul on Scrap

Allegheny is a large producer of electrical sheets. Because of the silicon content of this material, the scrap incident to stamping at consumers' plants is not easily disposed of and, in addition, there is a loss in the freight on the scrap portion of the sheet shipped to a consumer. These disadvantages are overcome through the manufacture of the stampings at the Allegheny plant.

Superior Steel Corp. is pushing its various grades of rustless iron while West Leechburg Steel Co. also is a producer of corrosion-resisting strip steel. Sharon Steel Hoop Co., one of the Hillman interests, although still a strong factor in the steel sheet and strip industry, is seeking to develop the market for wrought iron sheets.

Broader Use for Wrought Iron Seems Assured

Wrought iron, which has been best known in recent years in the form of pipe, may be expected to find a broader application as the result of activities of the A. M. Byers Co. which recently opened its new $12,000,000 plant at Ambridge, Pa., for the production of wrought iron on a large scale by its mechanical process. The new plant now is devoted largely to the production of semifinished material, but the markets for finished products other than pipe also are to be developed.

◆

Pittsburgh steel producers are making few predictions regarding the future course of business. Sentiment has been good all year, considering the disappointing rate of activity, and confidence still exists that the industry cannot remain for long in its present and recent depressed state.

October failed to live up to expectations, the September bulge flattening out last month, while the signs of price stiffening that began to make a belated appearance in September faded away and the old irregularity in quotations persisted.

It is recognized that little can be expected of the last two months of the year and in view of the collapse of previous turns for the better, producers are placing little faith in predictions of improvement until after the first of the year, when it is felt that the usual seasonal expansion in activity will be experienced. The deflated condition of steel inventories the country over still is regarded as one of the most favorable factors to support heavier demand.

◆

Cognizant of the hardships that appear in store for some during the winter as the result of poor industrial conditions, the city of Pittsburgh and Allegheny county are taking steps to provide relief.

Work is slated to be started as soon as possible on a number of bridge, highway and other construction jobs that will relieve the unemployment situation to a slight extent. A $100,000 emergency fund now is being distributed to destitute families. Construction work is to be opened as fast as possible, about $2,500,000 being involved in jobs on which bids closed last week.

At the same time, local banks continue to report increased deposits. Deposits of national banks as of Sept. 24 rose to a new high record at $604,166,660 compared with $470,535,716 a year ago. Combined deposits of state banks and trust companies increased from $514,586,913 at the close of 1929 to $540,678,428 in September of this year.

Structural Profits Not Commensurate with Volume

Structural fabricators have felt the effects of low prices this year. Structural business has been fair, particularly when compared with activity for the entire steel industry, but competition for jobs has been unusually keen. Prices bid on some work, according to one fabricator, have been the lowest in 15 years considering the present levels of overhead and wages. The low cost of construction work probably has stimulated its activity to a certain extent and on that score has been

of benefit to the steel industry in providing tonnage sorely needed, but at the same time it has spelled small profits for the fabricators.

Merger rumors, for several years concerned mainly with steel producers, now touch the structural fabricating industry. There has been an occasional report that the McClintic-Marshall Co., largest independent fabricator, is being sought by a steel producer, but confirmation is lacking that actual negotiations have been under way. It is pointed out, however, that the Bethlehem Steel Co. would be provided an important outlet for its tonnage to the west through such an affiliation and would strengthen the position it is seeking in that district through attempts to acquire the Youngstown Sheet & Tube Co.

Pennsylvania Car Order To Aid Employment

Freight car building is due for an upturn at the local shops of the Pennsylvania railroad, with 500 of the 1500 gondola cars that road has announced it will construct shortly scheduled for building at the Pitcairn plant. Three hundred men now on furlough will be called back to work at Pitcairn and at the Enola shops near Harrisburg where 500 cars also will be built.

The remaining 500 cars are scheduled for Altoona, where 150 men will continue on full time on this week in addition to 137 men who will be placed on full time in the fabricating shops in connection with the new car order. Operations of plants of the Standard Steel Car and Pressed Steel Car companies in this district continue at a low level.

◆

Pittsburgh is making additional direct connections with other cities in the delivery of steel products via the water route. The first shipment of steel between Pittsburgh and Rock Island, Ill., on the upper Mississippi river, left this district recently when the 111th tow of the Jones & Laughlin Steel Corp. included a barge loaded with several hundred tons of steel piling for use in the construction of the Rock Island river and rail terminal, a municipal project.

This barge steel piling also was the first cargo to be delivered at the new Rock Island terminal. The terminal will be served by the upper Mississippi division of the Inland Waterways Corp., the government-owned barge line, and also by the Mississippi Valley Barge Line Co.

The delivery of this barge to Rock Island may be the forerunner of other shipments to the Tri-Cities district, composed of Rock Island, Davenport and Moline, which is developing its waterways facilities with enthusiasm.

River shipments of steel products in the Pittsburgh district so far this year have kept slightly ahead of the 1929 tonnage despite the sharp curtailment in steel production. Increased activity in the longer hauls down the Ohio river has offset the reduced traffic on interplant shipments over the Monongahela river, while heavy pig iron shipments from West Virginia mills up the Allegheny river to the Allegheny Steel Co. at Brackenridge have boosted the tonnage on that stream considerably over the 1929 volume.

Combined shipments on the three rivers for the first nine months were 1,875,010 tons, against 1,869,695 tons a year ago. With the longer hauls becoming increasingly popular, the movement of river tonnage should rise to a new peak with the return of better conditions in the steel industry.

◆

In the meantime, Pittsburgh is commencing work on the first of two rail-river terminals, one for the handling of general merchandise and package freight and the second for bulk shipments. The Pittsburgh & Lake Erie railroad also is starting on a $500,000 rail-river transfer on the Ohio river near Monaca, Pa., a tract of land near Colona recently having been purchased from the Colonial Steel Co. Present plans call for the construction of two units, each having a handling capacity of from 400 to 500 tons per hour.

Watch Rival Methods of Constructing Barges

Possibility that the Inland Waterways Corp., the federal barge line, will be in the market shortly for 100 to 150 steel barges gives renewed interest to the welded type of floating equipment inasmuch as the success of such a barge now under construction by the Midland Barge Co. is expected to be a determining factor in the purchase of a large fleet.

Recent practice in barge building has leaned toward the riveted type, although several welded hulls have been built during the past year, mostly for experimental purposes. A considerable saving in cost is claimed for the welded construction over the older method.

◆

Pipe makers are looking forward to 1931 with optimism. Demand for line pipe has been relatively light the past several months following an unprecedented flow of orders earlier in the year and backlogs will be well depleted by the turn of the year, particularly in lapwelded material.

Laying of line pipe will be restricted during the winter months except in southern states. Hopes of pipe mills for next year are based on the number of prospective lines that failed to materalize this year because of inability to obtain early delivery, lack of suitable financing or for other reasons.

The fact that there is definite assurance that many of such projects will be carried out in 1931 indicates that mills will continue to enjoy a substantial pipe tonnage. Awards this year were not particularly heavy until the second quarter, and tardy buyers then found only deferred delivery available.

To avoid a repetition of this situation it is thought that buying may develop earlier next year, thereby giving mills a better balanced operating schedule over the 12 months. At the same time, however, capacity for production of large diameter pipe is greater and mills are in a position to accommodate a considerably larger tonnage than was true this spring.

Declare Moratorium on Steelworks Expansion

A recess in programs for expansion of steelmaking capacity is looked for during the next year by more, although plans of Pittsburgh district producers for plant improvements and additions have been and are being carried out this year in spite of the unfavorable business conditions.

Whether fears of the effects of adding further to the surplus steelmaking capacity of the country will deter contemplated construction in other sections is awaited with interest. Local mill equipment builders have enjoyed one of the most active years in history and appear likely to experience brisk operations during the remaining two months.

◆

Modernization work as well as new construction has contributed to the improved activity this year of the several mill machinery and equipment builders in this district, and even though the present business depression will tend to curtail the latter, prospects are regarded as favorable for a continuation of cost reduction work which in many cases means the purchase of new and more efficient equipment.

Little new construction is pending for Pittsburgh mills. National Tube Co. virtually has completed its new McKeesport project and the A. M. Byers Co. plant is in operation. Jones & Laughlin Steel Corp. still has a portion of its $21,000,000 improvement program to be worked out.

Soviet Plans More Iron

Soviet Russia will attempt in the year beginning Oct. 1 to produce 7,500,000 metric tons of pig iron, an increase of 36 per cent, according to a revision of the five-year program.

EDITORIAL

A Good Pattern for Trade Promotion

EACH succeeding convention of the American Institute of Steel Construction serves to demonstrate more clearly the constantly broadening field of influence and the increasing effectiveness of the work of this enterprising organization. In a brief period of nine years, the institute has advanced to the front rank of American trade associations.

At the end of its first year it had 100 members; now its roster includes 218 companies, comprising all but a few of the important firms in the field of steel construction. Its work has expanded gradually until today the institute is engaged in 21 major activities, each of which is conducted in accordance with a carefully prepared program. No other organization in the steel industry can boast of a schedule of constructive activities as important or diversified.

The standard specification drafted for the institute several years ago by a committee of five eminent architects and engineers has been adopted in the building codes of 42 cities, and 28 additional cities permit its use. Fifteen state bodies have adopted or use the specification. Already millions of dollars have been saved for builders through the agency of this model specification. The institute's code of standard practice, which for the first time accurately defined the obligations of buyers and sellers of structural steel, likewise has reduced waste by eliminating misunderstandings and confusion which heretofore often led to costly delay and litigation.

Activities Carry Institute's Influence Throughout World

Two and half years ago the institute published a standard handbook on steel construction. How this volume has fulfilled an urgent need is indicated by the fact 75,000 copies in seven editions have been distributed. Meantime the engineering department of the institute has been engaged in technical research on a broad scale. It has promoted standard specifications for fireproofing structural steel; developed the design of the battledeck floor and assisted in its application; explored the possibility of using steel for dams; investigated the subject of wind stresses in structures; worked for the simplification of structural steel sections; undertaken the task of analyzing and codifying data on test welds; promoted the use of steel H-piling in bridge abutments, piers, bents and building foundations; analyzed the possibilities for steel in small highway bridges; assisted in increasing the use of steel in airport structures and engaged in many activities incidental to developing new markets.

The institute has divided the United States and Canada into 12 districts and is maintaining an experienced engineer in each district for the purpose of advising builders in the proper use of structural steel. Orders for hundreds of thousands of tons of steel annually can be traced directly to the work of these district engineers. The institute's contracts with architects, engineers and the public also are maintained through the publication and distribution of numerous books, pamphlets, etc., and through addresses by officers and staff members before interested groups. Ninety addresses of this kind were presented during the past year. Meantime the institute's advertising and publicity is relied upon to further extend the scope of its promotional effort.

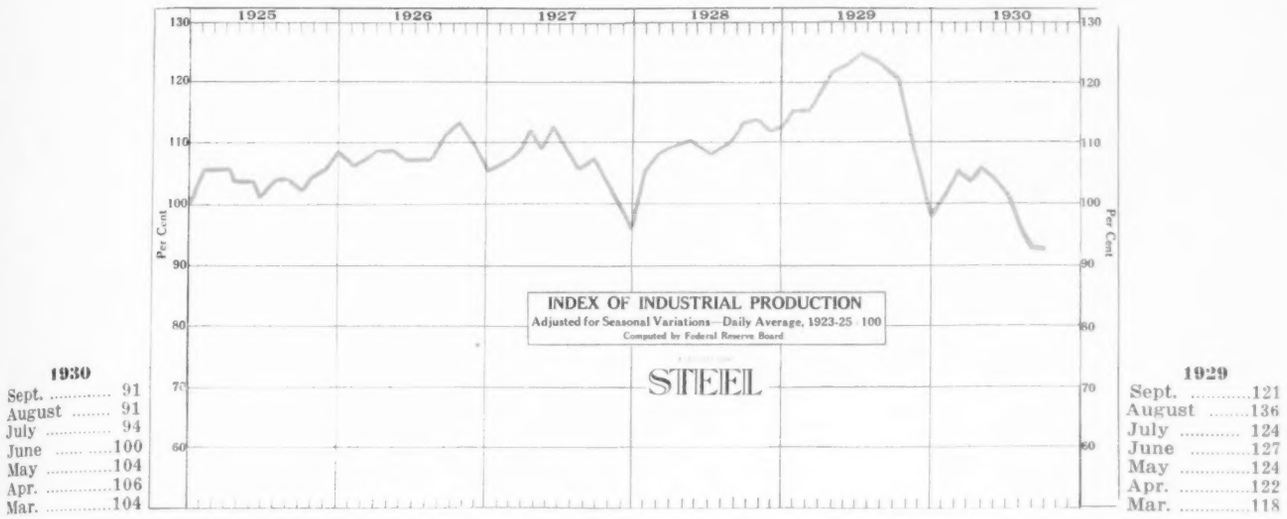
Other Branches of Steel Industry Can Profit from A. I. S. C. Example

We have recounted the achievements of the American Institute of Steel Construction in some detail because we believe that every branch of the steel industry can profit from its example. Everything that that organization has accomplished in its nine years of existence represents an expenditure of only one and a half million dollars. Where in the steel industry has a similar sum of money spent for promotional work produced results even distantly approaching those which have rewarded the efforts of the structural steel organization?

It will not be surprising if, within a short time, one or more groups of producers of rolled steel products will engage in co-operative promotion along the lines proved so effective by the steel construction organization. If the American Institute of Steel Construction, laboring under the obvious handicaps that surround an intermediate industry, can accomplish so much with a limited budget, a group of producers of rolled steel, with the advantages accruing to a primary industry, should be able to achieve even greater results.

In showing the way to successful co-operative effort, the American Institute of Steel Construction has performed a valuable service to the entire steel industry. It is to be hoped its example will be followed by other groups, a number of which are suffering unnecessarily because of lack of collective promotional effort.

THE BUSINESS TREND



Uncertainty Still Dims Business Outlook

LAST summer when business seemed exceedingly dull, it was not uncommon to hear experienced and cautious students of business say something like this: "Yes, conditions are pretty bad. But wait until fall. In September, or more likely in October, industrial activity will be on the upgrade."

October—the month of promise—has come and gone, but it has left a record of disappointment and confusion. As the statistics appear in the next few weeks, they will show conflicting testimony. The favorable factors will be so intermingled with those of depressing tone that it will be impossible to gain a clear cut idea of their significance.

However, enough is known of October from the current weekly statistics to state that nothing of sufficient importance occurred in that month to alter the listless trend of business. Apparently we still are at the mercy of conflicting influences, which, lacking strength to carry us far in any direction, are strong enough to keep us constantly in agitation.

October Witnessed Few Changes in Industrial Activity

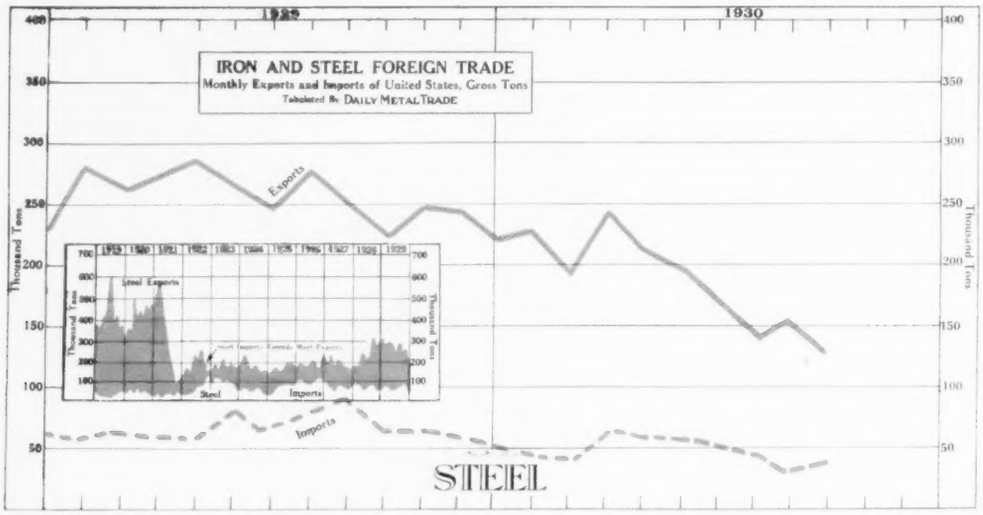
Industrial activity in October probably was not far from that of September. The monthly index of industrial production compiled by the Federal Reserve board—just announced for September—stands at 91, no change from August having occurred. It will be recalled that steel ingot production fell in September, contrary to a general belief that it would practically equal that of August. The reserve board's index, therefore, is somewhat reassuring to those who felt that September conditions were not as bad as indicated by some of the specialized barometers.

As for October, the larger industries have suffered recessions which probably will carry the month's production to lower levels than were registered in September. Pig iron and steel ingot output probably will be lower. Automobile production has not increased and probably will not until after the end of the year. Weekly indicators, such as freight car loadings, coal output, etc., are alternately increasing and decreasing, with no definite trend discernible.

Trend of Commodity Prices Is Not Yet Clearly Defined

The commodity price situation has changed little. Wholesale prices have failed to exhibit any decisive change from the long, slow decline, although a number of slight increases have given rise to hope that more definite firmness might appear soon. Iron and steel prices still are slipping moderately each week. The last week in October witnessed another drop of 8 cents, carrying STEEL's composite down to $32.06, a new low mark. The last dip was caused by weakness in nails and black sheets. Nevertheless there is more stability in the prices of many commodities. Finished steel products are exhibiting more firmness than in some time.

Some authorities still are in doubt as to whether history eventually will place the low point in the early fall of 1930 or in the last months of that year. A. T. Simonds calls attention to the possibilities in a brief statement on page 45 of this issue. It is likely that no definite answer will be forthcoming until we are able to view the valley of depression from the heights of future prosperity.



Exports

	Tons
Sept., 1930	131,211
Aug., 1930	151,235
Sept., 1929	221,415

Imports

Sept., 1930	40,285
Aug., 1930	35,387
Sept., 1929	61,245

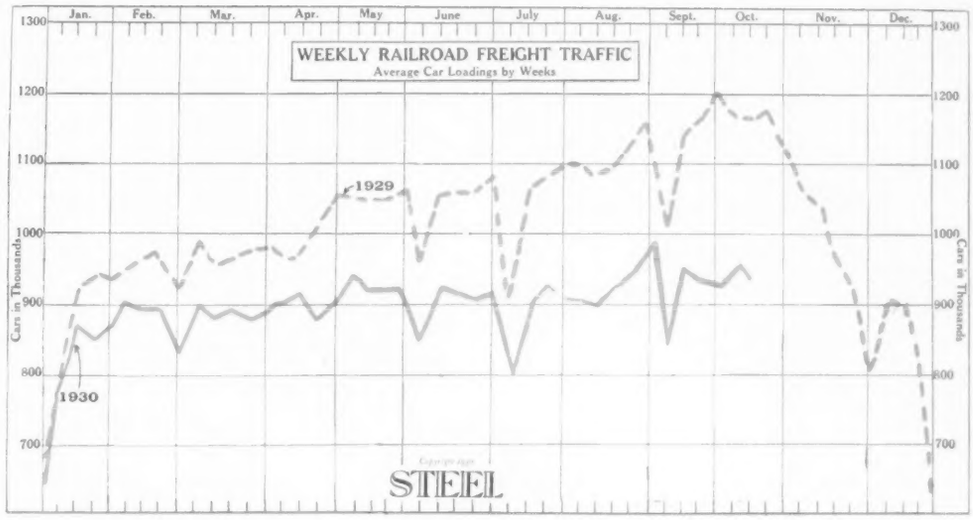
Iron and Steel Exports Slow Up; September Imports Recover

Exports of iron and steel during the month of September settled down to 131,211 tons, a little under the figure for July, after a surprising increase to 151,235 tons during August. Imports, amounting to 40,285 tons, after a drop to 35,387 tons in August, returned to a level slightly above that of July. Thus the gradual trend of diminishing difference between exports and imports, reversed a little during August, showed signs of returning. Imports for nine months of 1930 were 411,060 tons, or 32.4 per cent under the same period for 1929, and exports were 1,639,219 tons as compared with 2,327,635 tons in 1929. September imports averaged 1343 tons daily, and exports 4340 tons daily.

Earnings of U. S. Steel Corp. Show Decrease in Third Quarter

During the third quarter, earnings for the United States Steel Corp. amounted to $37,995,299, after federal taxes, but before depletion, depreciation, interest, etc., as compared with $47,061,304 during the second quarter this year, and with $70,173,713 in the third quarter, 1929. Although the total for three quarters in 1930, or $134,672,000, compares unfavorably with $202,274,555 in 1929, it is but 3.1 per cent under the same figure for 1928. However, the trend during three successive quarters this year is downward, while it was upward in 1928. Net profit for the third quarter, 1930, was $23,182,283, approximately 25.5 per cent under the second quarter.

	1929	1930
Sept.	$21,183,566	$11,514,933
Aug.	24,687,088	13,000,496
July	24,303,058	13,479,870



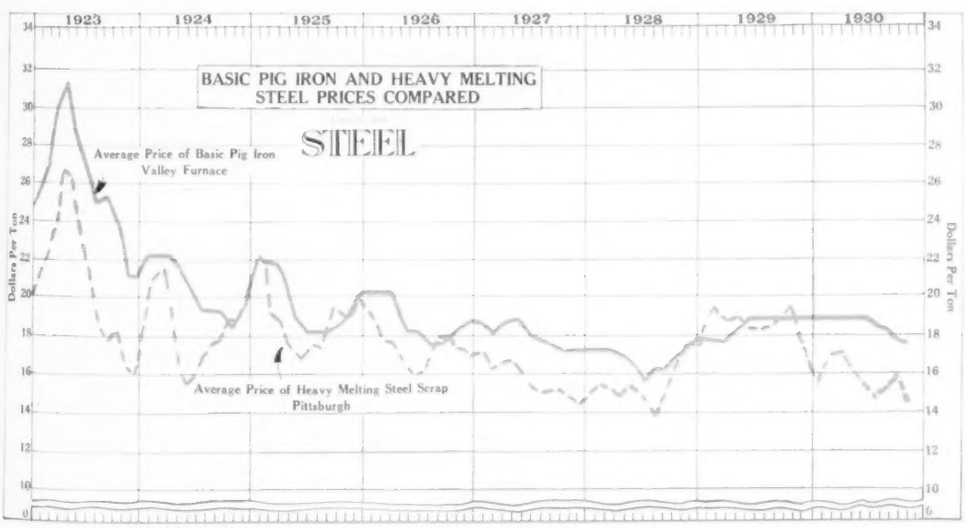
1930	
Oct. 18	931,085
Oct. 11	954,874
Oct. 4	972,492
Sept. 27	950,381
Sept. 20	952,512
1929	
Oct. 18	1,185,564
Oct. 11	1,179,540
Oct. 4	1,179,047
Sept. 27	1,202,111
Sept. 20	1,166,330

Revenue Freight Traffic Reductions Continue In All Districts

Loadings of revenue freight for the week ended Oct. 18, placed at 931,085 cars, were 23,789 under the previous week and 254,479 under the same period last year, marking the second successive retreat from a secondary high point of the year, 972,492 cars loaded during the week ended Oct. 4. All districts of the country reported reductions in loadings of all commodities, principally coal, ore, grain and miscellaneous products, as compared with the same weeks in 1929 and 1928. Loadings for the year to Oct. 18 were 12.5 per cent under the corresponding period for 1929, but were only 8.9 per cent under the 1928 period. The seasonal trend downward may be lower than in the past two years.

Prices In Steel Scrap Break, Follow Pig Iron Downward

While basic pig iron continued to drift downward against little resistance in October as in September, heavy melting steel broke and lost all of the ground it had gained in the two previous months. The October average for heavy melting steel scrap, Pittsburgh, went to $14.40, the lowest since July, 1928, as compared with $15.70 in September of this year and $15.19 in August. The drop, which developed in mid-October, is largely accounted for in distress sales and accumulations. Basic pig iron, which until July had stood at $18.50 since June, 1929, continued its decline by reaching an average of $17.20, as compared with $17.75 in the previous month.


1923 1924 1925 1926 1927 1928 1929 1930
BASIC PIG IRON AND HEAVY MELTING STEEL PRICES COMPARED
STEEL
Average Price of Basic Pig Iron Valley Furnace
Average Price of Heavy Melting Steel Scrap Pittsburgh
Dollars Per Ton

Basic Pig Iron	1930	1929
Oct.	$17.20	$18.50
Sept.	17.75	18.50
Aug.	18.00	18.50
July	18.20	18.50
June	18.50	18.50
Heavy Melting Steel		
Oct.	$14.40	$17.30
Sept.	15.70	18.45
Aug.	15.19	18.90
July	14.90	18.45
June	15.10	18.30

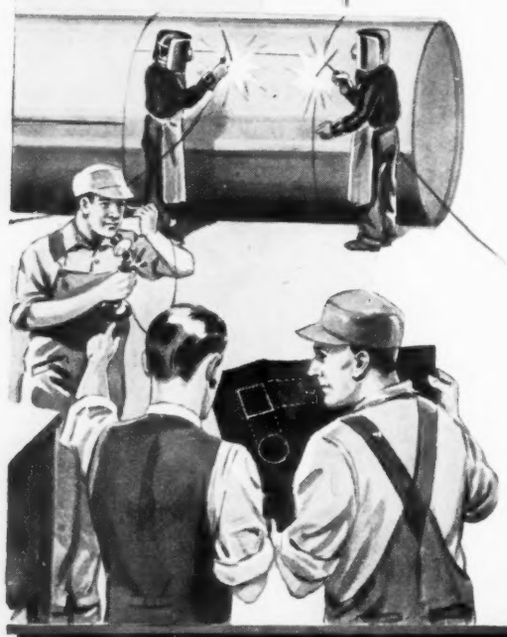
"I am ARC WELDING . . . where I work QUIET reigns"

WHO can measure the cost of the needless noise in manufacturing and construction — the overstrained nerves that result in lowered output and poorer quality.

The ear splitting, rat-a-tat-tat of metal against metal and the deafening racket of vibrating machinery are unnecessary. Arc welding supplants these noise-producing operations, as well as many others, with a quietness which improves working conditions and promotes faster production.

Arc welding silently fuses member into member, giving the product or structure full advantage of the strength and rigidity of the material used.

This quiet, swift method of production merits your investigation. You will find that you can also profit from the many other real advantages arc welding offers. Ask the sponsors of this message for detailed information.



I am ARC WELDING

my sponsors are

GENERAL ELECTRIC COMPANY
Schenectady, N. Y.

WESTINGHOUSE ELECTR.C & MFG. CO.
East Pittsburgh, Pa.

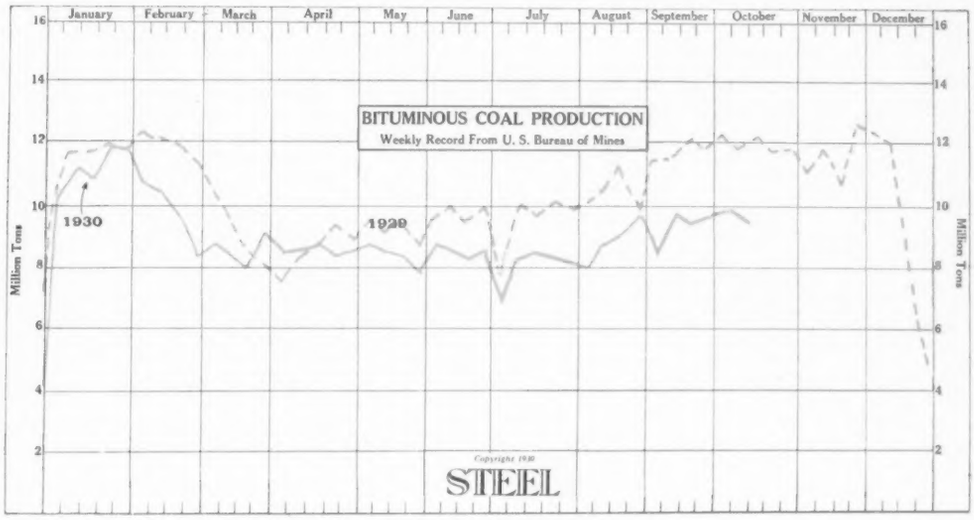
LINCOLN ELECTRIC COMPANY
Cleveland Ohio

NORTHWESTERN MFG. COMPANY
Milwaukee, Wis.

UNA WELDING & BONDING COMPANY
Cleveland, Ohio

WILSON WELDER & METALS COMPANY
North Bergen, N. J.

MY PLATFORM IS STEEL · MY CREED IS PROGRESS



Thousands of Tons

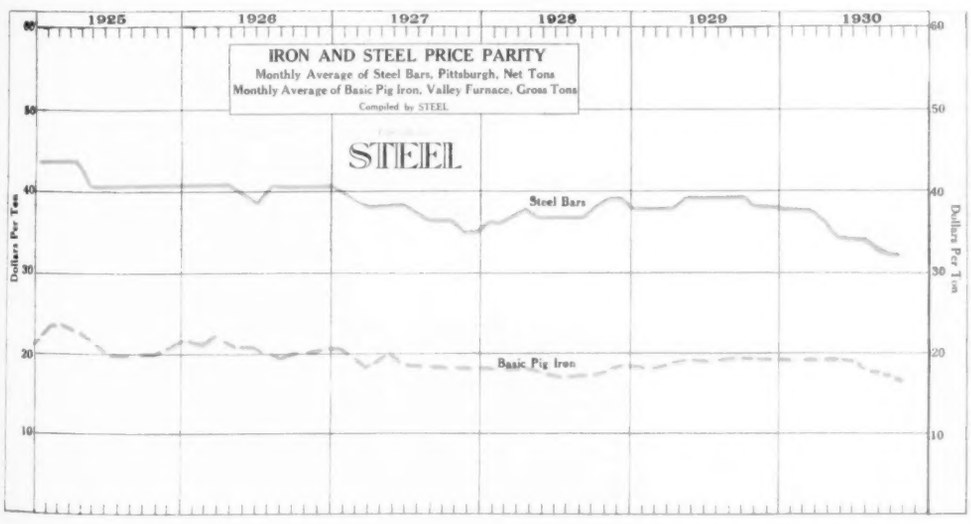
	1930	1929
Oct. 18	9,230	11,354
Oct. 11	9,495	11,787
Oct. 4	9,304	11,314
Sept. 27	9,100	11,605

Soft Coal Production Mounts to New High Point

Soft coal production during the week ended Oct. 25 exhibited a marked increase over the preceding week, and for the first time since the middle of February went over ten million tons per week. The total of 10,438,000 tons was 1,208,000 tons, or 13.1 per cent, higher than production for the week ended Oct. 18. The rise indicates that the expected seasonal upturn apparently has started. The total production for the year to date is 374,732,000 tons, as compared with 431,398,000 for the same period a year ago. The weekly output, as it now stands, is a little over a million tons less than that of the same week last year.

Steel Bar Quotations Hold Ground, Basic Pig Iron Prices Drop

Steel prices in October approached stabilization in a manner which was not evidenced in prices of pig iron, according to averages compiled by STEEL. During the entire month quotations for steel bars, Pittsburgh base, held at $32, the figure which prevailed in the September average. Basic pig iron, valley furnace, showed a tendency to firm earlier in the month at $17.50, due largely to commitments and inquiries for the quarter, but buyers lost interest and the quotations for the final week, at $17, brought the monthly average for October down to $17.20, a new low, as compared with $17.75 in September and $18 in August.



Steel Bars

	1930	1929
Oct.	$32.00	$38.00
Sept.	32.00	39.00
Aug.	33.00	39.00
July	34.00	39.00
June	35.00	39.00

Basic Pig Iron

Oct.	$17.20	$18.50
Sept.	17.75	18.00
Aug.	18.00	18.50
July	18.20	18.50
June	18.50	18.50

THE YEARBOOK

ANNUAL
STATISTICAL
ISSUE

JANUARY 1, 1931

An Institution throughout the entire Steel Industry ⁘ ⁘ PRODUCTION · PROCESSING DISTRIBUTION · · · USE.

Use enough space to tell the complete story of your product or service · · Make this the Master advertisement of the year.

Forms start to press Dec. 15th. Copy due Dec. 1st.

Old enough to know the great traditions of steel

STEEL

A PENTON PUBLICATION

Cleveland

Young enough to lead the industry in a modern age.

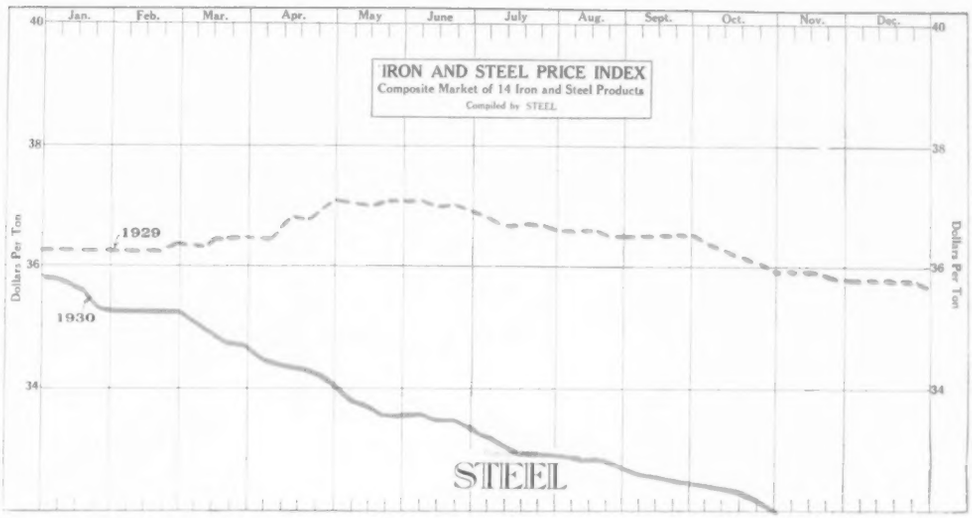
NEW YORK · PITTSBURGH · CHICAGO · SAN FRANCISCO · LONDON

Weekly Figures

Oct. 29	$32.06
Oct. 22	32.14
Oct. 15	32.24
Oct. 8	32.32
Oct. 1	32.62
Sept. 24	32.56
Sept. 17	32.64

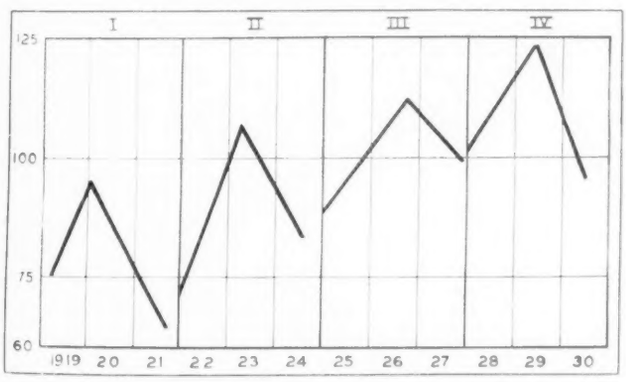
Monthly Averages

October, 1930	$32.28
September, 1930	32.65
August, 1930	32.99
July, 1930	33.21
October, 1929	36.23



STEEL'S Composite of Iron and Steel Prices Still Receding

Weakness in wire nails and black sheets caused another downward revision of STEEL'S composite of the prices of 14 steel and iron products. The figure on Oct. 29 stood at $32.06, which is the lowest point attained by that barometer in recent years. Present indications are that during the current week the composite will be carried to a point below $32—this in spite of the fact that the prices of the more important finished steel products are holding well. The present decline already has exceeded in length that which occurred in 1921 and 1922, and the end is not yet in sight. The average of the weekly figures for October was $32.28, as compared with $36.23 for October, 1929.



For this graph depicting the volume of industrial production, the monthly average volume for 1923, 1924 and 1925 as reported by the Federal Reserve board is employed as the base of 100. The index for any month is the percentage that the production of that month is of this base. The low point in 1921 was 64; the low of 1930 to date is September, at 90½

Will History Show Low Point in August or Later?

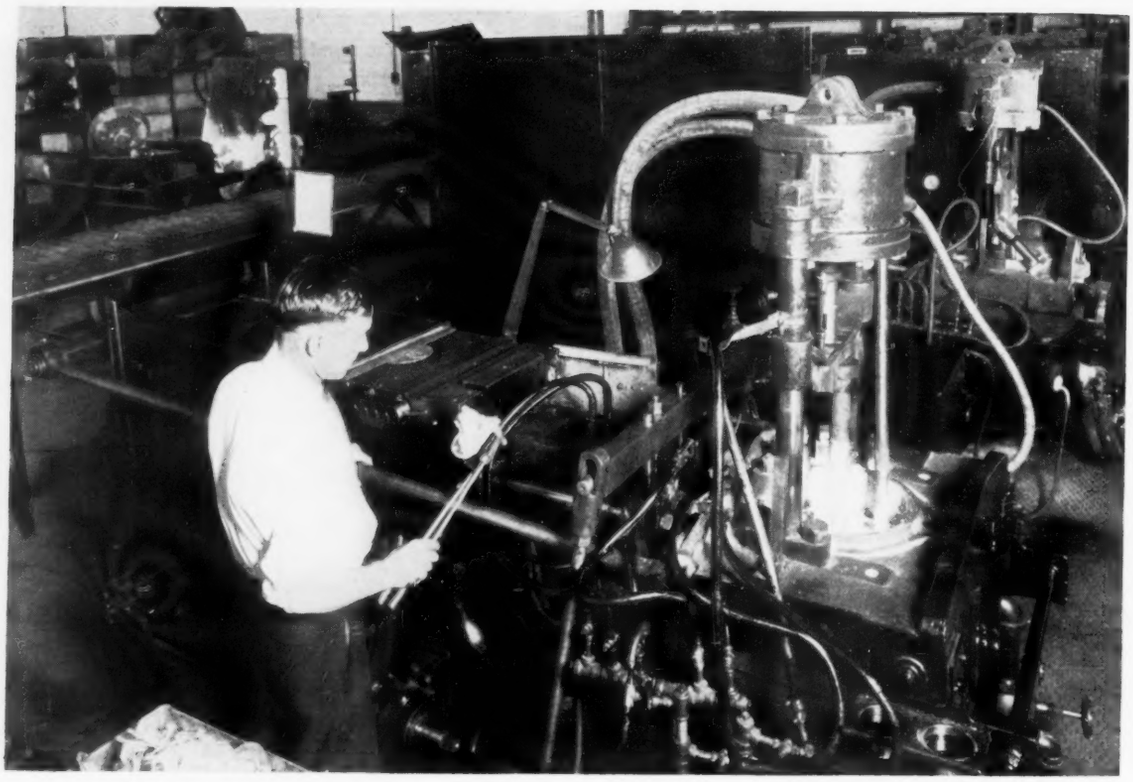
Alvan T. Simonds, president, Simonds Saw & Steel Co., Fitchburg, Mass., in his periodical forecast of business, says:

"It appears at this writing that the low point of the depression was reached late in July or in August. Since then, industrial production has varied but little.

"If business has turned up, then stock prices have not turned up with business. The traditional belief that stock prices make their turns about six months before the turns in business was based on the experience before the war. Before the war, comparatively little accurate business data was collected promptly. It was natural, when men were kept in the dark as to the actual status of business, that operators in the stock market should make up their minds as to the turning points before they arrived and should thus make up their minds earlier than business men not operating in the stock market.

"Since the war, business data are reported promptly and very accurately and any business man who is interested enough to follow and study such reports can reach a sounder conclusion in regard to future movements of business than was the general opinion of stock market operators before the war. In 1929, stock market prices did not turn down until after business had turned down. This may explain why in 1930 business may have turned up before stock prices.

"It is still possible (and many think likely) that the extreme low point of the depression will fall near the end of the year, either in December, 1930 or in January, 1931."



DIE CASTING

PREJUDICE against the use of the automatic die-casting machine for the reproduction of drilled, shaped, milled or threaded parts largely has been relegated to the background. At many plants in this country automatic machines of the type shown above are operated in batteries of 20 or more.

Die cast automobile windshield support, 4 feet long

Standardized Die-Casting Alloys and Machines Aid Industry

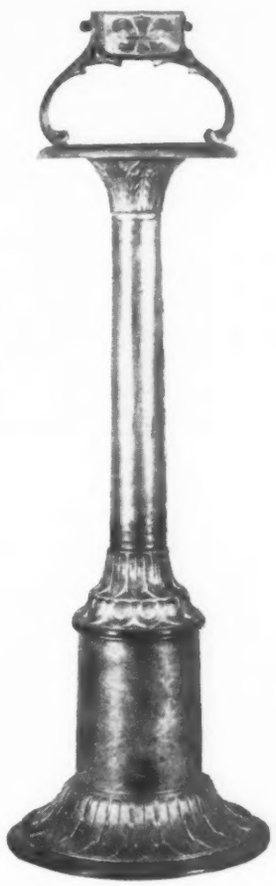
BY CHARLES PACK
Consulting Engineer, New York

Part I

DIE casting as an individual unit of the metalworking art has just completed its first quarter century of existence. At the outset the die-casting process was not considered seriously as a manufacturing method and few companies were engaged in this line of work. Today the industry is composed of about 125 makers. In 1904 the value of die castings marketed was slightly less than $1,000,000; last year gross sales were estimated at $40,000,000.

The comparative low cost of popular American appliances such as automobiles, radios, vacuum sweepers, and other devices, is dependent to a large extent on the economies made possible by the die-casting process. The automotive industry consumes over 50 per cent of the die castings produced and these have contributed in a large measure to the world supremacy of American automotive appliances. Applications of die castings to automotive products include: Ornamental hardware, speedometers, carburetors, gasoline pumps, gages and instruments, radiator caps, oil filters, lamps, ignition parts, heaters, hydraulic brakes, windshield cleaners and locks.

Although the growth of the industry has been phenomenal, the art of die casting and its technique have not been in keeping with the progress that has been made in competitive metalworking arts such as foundry practice, metal stamping and automotive screw-machine practice. The industry has floundered hopelessly, surrounded by prejudices and antiquated practices, all hidden behind a veil of secrecy, mystery and suspicion. The next few years will witness a tremendous growth in the die-casting industry and in the use of die-cast products. This growth is presaged by the determination of producers and users of die castings to remove the shroud of mystery from die castings and to standardize the process as well as the product. Encouraging symptoms, which prompt this prediction, include:



Complete ash stand produced by die casting

1. The organization of the American Die Casting institute, an association of die-casting manufacturers, organized for the purpose of standardizing methods and practices and to encourage progress in the art. The willingness of competitive manufacturers to meet and discuss the problems common to their industry is always a hopeful sign for that industry. Such an association, based on sound principles and striving to produce a better product at a lower cost, is an assurance of future progress and will be supported by every progressive manufacturer.

2. The appointment of a committee by the American Society for Testing Materials to study the properties of die-casting alloys, in order that these alloys may be removed from the realm of secret practices and in order that users of die castings may have available definite and dependable data on the physical properties of any alloys suitable for die castings. This committee now has been functioning for three years. The value

of its work already has been amply demonstrated. Many of the country's leading metallurgists and 15 of the country's best equipped metallurgical laboratories are co-operating in this work. The program comprises the testing of 80,000 test bars and the information gathered as a result of these tests will be made public. The beneficial effect of this work on the die-casting industry must be self evident.

3. The development of automatic die-casting equipment and the elimination of prejudice against the use of such equipment. Orthodox die-casting engineers have clung to the fallacy that die castings could not be made with automatic equipment, in a practical and economical way. It remained for some of our large users of die castings to break down this prejudice and develop their own automatic equipment. At present many plants in this country and abroad, are producing die castings at a speed that is limited only by the speed with which the metal can be cooled in the die. The rate of cooling depends of course, on the bulk of metal being cast and the amount of artificial cooling that can be applied. Production of 350 to 1000 shots per hour on this type of equipment is standard practice.

4. Favorable results in the development of equipment for die casting the copper-zinc alloys or so-called brasses. Europe has led in this development and the yellow brasses now are being die cast on a commercial and practical basis in Sweden, France, Russia, Japan and Czecho-Slovakia. This process is being introduced in this country and it is safe to predict that the die casting of brass, in metal molds and under high pressure, will be placed on a commercial basis in this country soon.

5. The recognition on the part of large industrial concerns of the many advantages of the die-casting process and their determination to use die castings and train their personnel in the manufacture of die castings. One of the most encouraging events in this direction, is the decision by the Western Electric Co., to use die castings for practically all visible parts of its French-type telephone and the installation of equipment for their production. Another interesting installation of die-casting equipment is to be found in the plant of the A. C. Spark Plug Co., Flint, Mich., which manufactures all the speedometers, gasoline pumps, oil filters, ammeters, etc., for the General Motors Corp. In this plant, 30 full automatic die-casting machines are in operation producing normally about one million pounds of intricate die castings per month. Auxiliary die-casting departments also are operated by the General Electric Co., Western Electric Co., Dura Co., National Cash Register Co., Sparks Withington Co., Tillotson Carburetor Co., Ternstedt Mfg. Co., Westinghouse Electric & Mfg. Co., Trico Co., Yale & Towne, Hoover Suction Sweeper Co. and Briggs & Stratton Corp.

Full automatic die-casting machine. Only one attendant is required to operate two or more machines of this type

Users Install Equipment

With the standardization of die-casting alloys and machine practice, there has been a greater tendency for die-casting users to install equipment for the production of their requirements. It is evident that the installation of this equipment has given greater encouragement to the use of die castings and the additional demands thereby created, have more than compensated the job shops for the loss of business to the producers of die castings for their own products. This is evidenced by the fact that prior to the recent business depression, every reliable die-casting job shop in the country was operated at full capacity and many were engaged in expanding their plants and production facilities.

The die-casting industry today is undergoing a process of regeneration. Some alarmists contend that the job die-casting plant is doomed. As a matter of fact the die-casting industry is simply following in the footsteps of similar industries such as metal stamping, foundry practice, screw-machine products etc. It is not unusual for manufacturers to operate their own foundry, stamping presses or screw machines. Nevertheless many large job shops are engaged in these activities. The same holds true for the die-casting industry. Many users of die castings undoubtedly will find it more economical to produce their own die castings, but there always will be ample work available for the well-managed and well-equipped die-casting job shop.

Die-casting jobbers cannot expect to prosper unless their equipment is as efficient as that available to the manufacturer of his own product. It would seem absurd for any job shop to attempt to make screw-machine products on an ordinary hand lathe yet is is equally absurd for the die-casting job shop to believe that it can compete with antiquated, hand-operated equipment,

that bears the same relation to the modern automatic die-casting machine, that the hand lathe bears to the modern automatic screw machine. The evident trend towards the installation of die-casting equipment by manufacturers for their own product, emphasizes the fact that the job die-casting plant must reorganize and place itself on a high plane of efficiency. The job shop that heeds this warning, need not fear the loss of business because of their customers decision to make their own die castings. Such job shops always will find ample work at a good profit. Job shops that rely on past reputation, high-pressure selling, secret processes, etc. are doomed to failure in the present highly competitive era.

Some of the enthusiastic proponents of die-casting equipment sometimes have permitted their enthusiasm to run away with their judgement, in their eager desire to make a sale. There is more to the economical manufacture of die castings then the mere purchase and installation of a die-casting machine. To the layman, unskilled in the art, all die-casting machines look alike. He may often be misled by a high-speed demonstration.

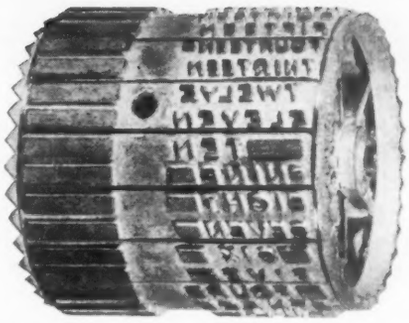
The man experienced in the art knows that all die-casting machines are not alike and that the so-called universal die-casting machine is a myth. The machines on the market differ in principle as well as in important details. The mere fact that a machine is producing a lock housing with apparent satisfaction is no indication that it is producing that part most economically nor that the same machine is best suited for the production of ornamental hardware castings.

Operating Principles Essential

It is evident folly for the layman, unskilled in the art, to purchase a die-casting machine before he has familiarized fully himself with the principles of that machine as well as of the competitive machines available. The prospective purchaser of die-casting equipment should know definitely that the machine he is about to purchase is the best suited for his particular needs and should understand clearly the reason for that superiority. In buying die-casting equipment, the following are a few of the important factors that should be given careful consideration:

1. *Economy.* Is it good economy to manufacture your own die-castings and why?

2. *Principle of Casting.* What is the basic principle of casting used in the machine? Is it of the plunger type or does it operate by direct air pressure? Which is the best suited for your requirements and why?



This cylinder for a check writing device also is a product of the die-casting machine

3. *Principle of Gating.* Is the machine built around the center gate or side gate principle? If you expect to use dies now in existance are they constructed around the center or side gate principle?

4. *Safety.* Is the machine foolproof or does any danger exist for serious injury from squirting of molten metal?

5. *Obsolescence.* Will the machine wear out or is it reasonable to expect that it may soon be superceded by a more efficient machine?

6. *Machine Maintenance.* Is the machine built to withstand the wear and tear of continuous production with a minimum of wear and its attendant high maintenance costs?

7. *Skill of Operation.* Can the machine be operated with a minimum of skill or will it be necessary to train experienced operators and supervision in order to obtain satisfactory results?

8. *Cores.* Is the machine provided with the necessary mechanism for pulling cores in all directions including such cores that must be pulled before opening the die or will it be necessary to provide such mechanism with each individual die?

9. *Patents.* Is the machine free from any possible question of patent infringement?

(To be continued)

Coffee Pot of 18-8 Alloy Is Drawn and Spun

An interesting job of drawing and spinning 18 per cent chromium 8 per cent nickel steel has just been turned out by the Polar Ware Co., Sheboygan, Wis., in the form of an individual tea or coffee pot for hotel and restaurant use. The pot holds something over a single cup of beverage and is made of 24-gage, 0.025-inch thick, Allegheny metal, a product of the Allegheny Steel Co., Brackenridge, Pa.

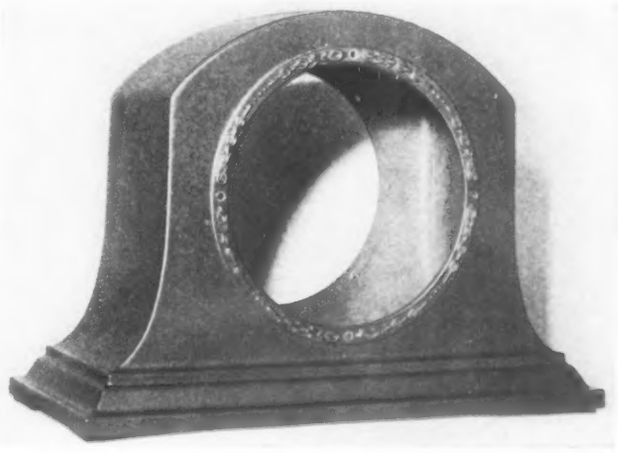
The body of the pot is one piece, seamless drawn into a cylindrical shape and finished by spinning. The strainer is integral with the body and is put in by embossing and perforating. The cover is drawn and then finished by spinning; the knob is put on by spinning. The handle is made from a sheet, formed and welded on and the spout is made in the same manner. The material is ground and polished before welding and after welding the beads are ground off and the final finish produced.

The new coffee pot is the first known instance of Allegheny metal entering the dining room equipment field, although it is already widely used for larger kitchen equipment and utensils in hotels and restaurants.

Recommends Coal Sizes

In an effort towards reducing the confusion in sizes and terminology now in use for bituminous coal, the department of commerce, Washington, has recommended standard sizes and terminology which are presented in Regional Recommendation RRI-29 of the department entitled "Simplification of Sizes and Terminology of High Volatile Bituminous Coal." This recommendation applies only to high volatile bituminous coal handled over the docks of the American head of the Great Lakes.

Greenville Steel & Foundry Co., Greenville, S. C., 120 Markly street has increased its capital from $30,000 to $60,000.



Housing for a radio loud speaker weighing over 8 pounds and made by the die-casting process

Cast Pipe To Carry Telephone Cables Under Harlem River

TO CARRY telephone cables of the New York Telephone Co. from one side of the Harlem river to the other, a cast-iron conduit tunnel, 614 feet long, now is being laid under the river at 127th street and Second avenue, New York. This tunnel, consisting of 64 sections of bell and spigot type pipe and fittings, will accommodate a total of 300,000 separate wires or 150,000 telephone circuits. The pipe is being made by the Warren Foundry & Pipe Co., Phillipsburg, N. J., and is made up of two reducers, 105 to 84 inches diameter with spigot ends; eight 84-inch curves 6 feet long; and a number of 12-foot lengths of 84 inches diameter.

Various details in the manufacture of the pipe, which is believed to be the largest ever cast, were explained by G. E. Hagermann, associate editor, Alexander Hamilton institute, New York, before a joint meeting of the Newark Foundrymen's association and the metropolitan section of the American Society of Mechanical Engineers in Newark, N. J., Oct. 22. The speaker, formerly engineer at the Phillipsburg plant of the Warren Foundry & Pipe Co. for five years, substituted for John Tirrell, general foreman, who was unable to present the paper because of illness.

Detailing some of the principal stages in the manufacture of the pipe, the speaker mentioned that the pipes and curves were poured bell end up. While the mold ovens, core ovens, casting pits and material-handling facilities were ample, it was necessary to adjust certain equipment to the unusual large size of the work. The flasks, corebars and patterns were made special. The ramming machine used for regular pipe were designed to take work up to only 60 inches, inside diameter, hence, it was necesary to ram the 84-inch pipes by hand.

Sectional Flasks Used

Flasks were built in section, split on the diameter and were molded from wood patterns and cast in the floor of the green sand foundry. Corebars for the straight pipe were cast as cylinders, and into each end heavy spiders were riveted to carry the journals. Corebars and assembled flasks were approximately 14 feet in overall length. Chill plates on which to mount the flasks were cast from patterns in green sand. Cores for the reducers and curves were made by using sweeps.

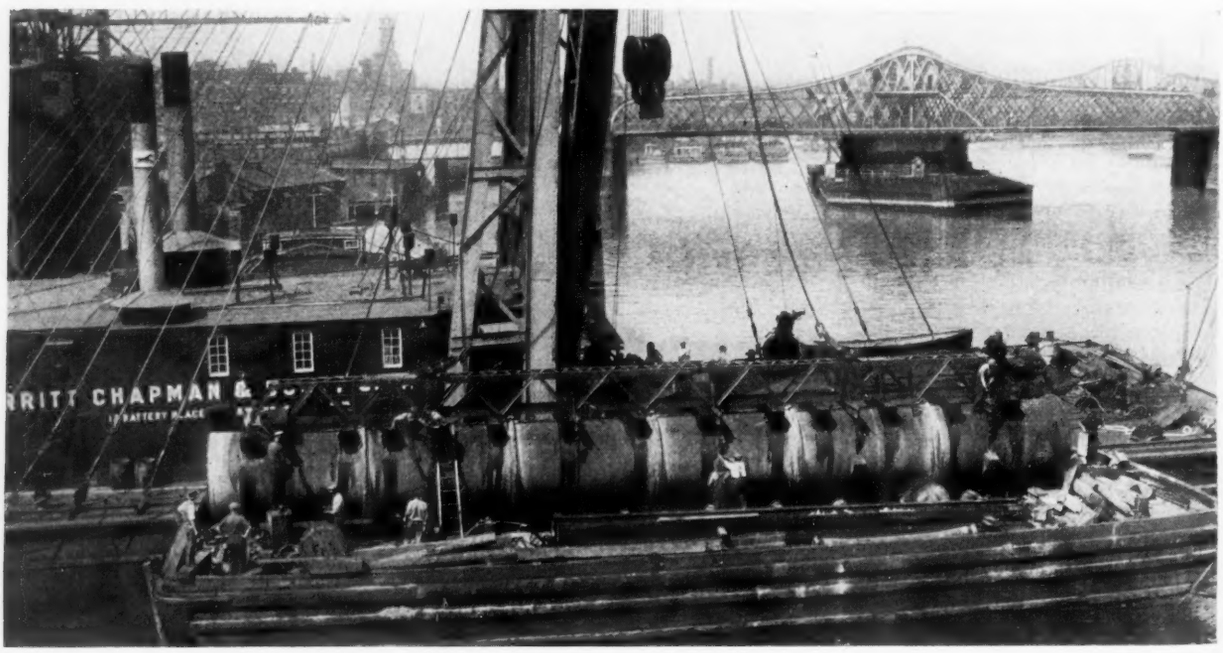
The body pattern used for ramming up the molds for the straight pipe was a cast-iron cylinder, provided with a heavy eyebolt in the top for lifting, and machined to fit accurately into the socket iron at the bottom of the flask, centered the pattern during the ramming process. The bead projection on the spigot end of the pipe was formed in the mold by sweeping, because the regular contracting band method could not be employed on such large work. The body pattern for the curves was made of wood. The reducer molds were swept up.

The casting process was in the usual continuous straight-line manner. Flasks were rammed by hand by men walking around the top flange as other men shoveled sand into the mold. The bell section was formed by split patterns inserted around the body pattern at the top of the mold. The molds were then split into halves along the diameter and carried by crane into the mold oven, where they were baked. They then were moved into the casting pit, assembled, the joints sealed, and corebars inserted.

Corebars were run up in horizontal position on the regular core machines. The journals in the ends of the corebar rested on rollers and the bar was revolved by a motor-driven mechanism at the end of the machine. Straw rope was run on the bars, and, on top of this, the loam. The coating on the bar, as the bar revolved, was trued to size against a stationary strikeboard. The latter also formed the core for the lead groove in the bell of the pipe.

The corebars were set on racks carried by trucks and baked in the core ovens. They then were removed and placed in the flasks, being centered by the chill plate at the bottom of the flask.

Pouring was done by means of two ladles. Two separate pouring basins were formed at the top of the flask, each taking in half of the circumference. A 7 and a 5-ton ladle were used. Two tons of iron first was



Floating derrick with a lifting capacity of 350 tons which was used for lowering assembled sections into the water

Timken Heavy-Duty Mill Type Quad Bearings 29½" Bore, 46½" outside diameter, 29" width. Capacity 7,000,000 pounds.

Timken Bearings *are* Licking *the* Toughest Jobs *in* Industry—Hence *their* Vital Necessity *in* Mill Roll Necks

Sweeping on and up with an irresistible rush, Timken Bearings soar to greater and greater heights of achievement as they are pitted against the toughest jobs that Industry can produce . . . upsetting all preconceived ideas of production and production costs . . . revolutionizing anti-friction requirements . . . brushing aside old theories and traditions to make way for new standards of anti-friction efficiency, economy and endurance.

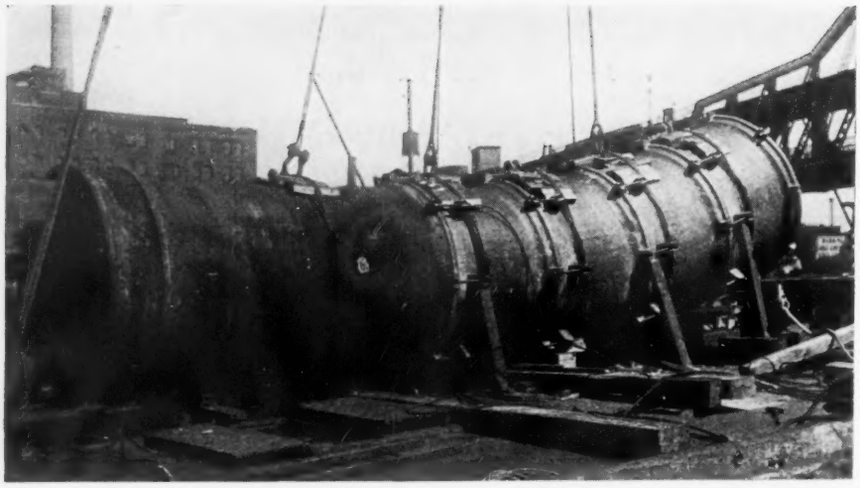
Terrific pressure loads such as are met in steel rolling mill service—as high as 7,000,000 pounds, are being carried by Timken Bearings in many of the country's largest steel plants.

Hair-breadth accuracy such as is demanded by the finest precision machine tool work is maintained as a matter of regular daily routine.

And thrust and weight and shock—no matter how severe, are handled with equal capability and sureness whether encountered in such widely different types of heavy duty service as automobile operation, paper mills, transcontinental limited trains, oil field equipment or any other kind of machinery.

Wherever wheels and shafts turn, "Timken Bearing Equipped" is the modern symbol of protection and saving. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**



Eight curved sections, each 84 inches diameter and 6 feet long, compose sections of the tunnel

poured from the 7-ton ladle, after which the ladles poured equally to make sure that the risers would fill at the same time and carry all the dirt to the surface.

After the pipes were poured and had cooled partially, corebars were withdrawn, the sections of the flask removed, and chains slung around the pipes, which then were lifted by crane from the pit and taken for cleaning, chipping, coating by hand with tar, and final testing and inspection.

In laying the pipe, Merritt-Chapman & Scott Corp., New York City, engineer and contractor, use a floating derrick, with 350 tons lifting capacity, said to be largest in world. The general method was to assemble several sections of the pipe, or curves, on the derrick, pour the lead hot, and calk it; then lower the assembled unit into the water by a special cradle handled by the boom.

Derrick Counterbalanced

The first section placed was 36 feet long and weighed 70,000 pounds. The second section was 72 feet long (six pipes of 12 feet laying length each) and weighed 110,000 pounds. The derrick was counter-balanced by longitudinal bulkheads, water being pumped between these to compensate for the overhanging loads as they are swung over the side so that the derrick will not upset.

To prepare for laying the pipe, excavations for the land ends were made by drawing cofferdams from the sides of the manhole almost to the bulkhead lines on both sides of the river. Foundations for the part under the water were prepared by dredging the bottom of the river, utilizing a 16-ton capacity bucket that removed 5000 tons of sludge in 6¼ hours. The tunnel is laid with a clearance of 27 feet below mean low water level. It is carried on cradles of piles, with crossbars or sills holding cast-iron saddles upon which the pipe will rest. When the installation is completed, forms will be set up on the piles and concrete poured around the tunnel, to a depth of 2 feet on top of the pipe and 6 inches on the sides. The tunnel will be pumped dry and allowed to settle for several weeks. Then, in the early part of 1931, the cables will be installed.

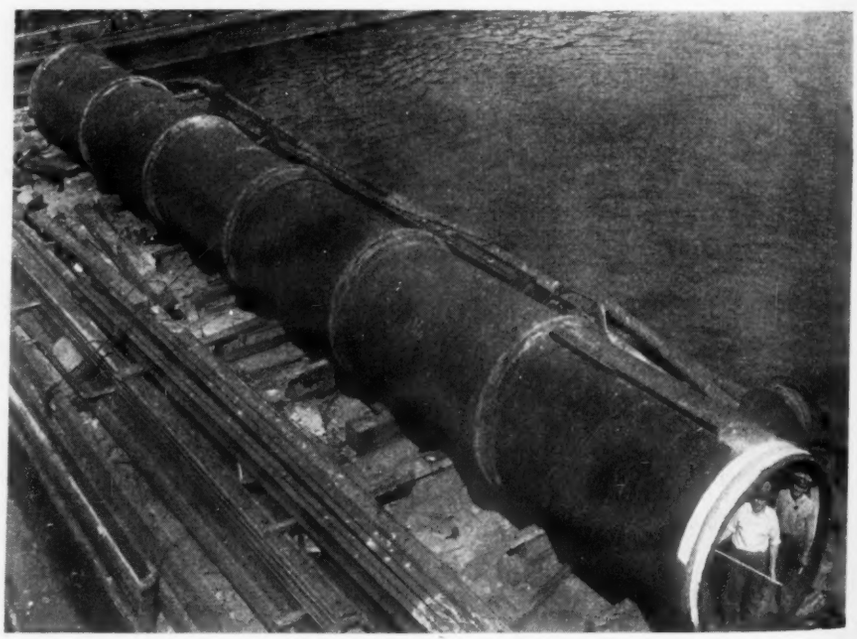
Good Lubrication Depends Upon Bearing Design

Principles and methods of lubrication, both of plain and antifriction bearings, were presented by L. H. Nielson, Vacuum Oil Co., New York, in his paper "Bearings and Their Lubrication," at a recent meeting of the Hartford, Conn., chapter of the American Society for Steel Treating. The speaker, covered the principle of the lubricating oil film and wedge, the formation and maintainance of lubricating oil film, methods of application and the selection of lubricants.

Mr. Nielson stressed the importance of chamfering the oil grooves of a plain bearing in the direction of rotation of the shaft. Oil grooves should be placed about 30 to 45 degrees in front of the point of greatest pressure and the number of these grooves should be as small as possible. Criss cross and fancy oil grooves tend to lead the oil from the points at which it is needed and they also reduce the effective area of bearing surface. As the pressure increases more points of application of the lubricant must be provided.

Roller bearings are lubricated to protect the high polish and to lubricate the rollers. Only enough lubricant is required to reach the level of half the height of the ball or roller at the bottom of the bearing. Tapered bearings act as centrifugal pumps. The large end should be placed on the inside to pump the oil away from the packing and a groove should be provided to return the oil to the small end of the bearing. To minimize fluid friction, the oil used should possess the lightest body that will maintain, with safety, a complete film under existing conditions of load, speed and temperature.

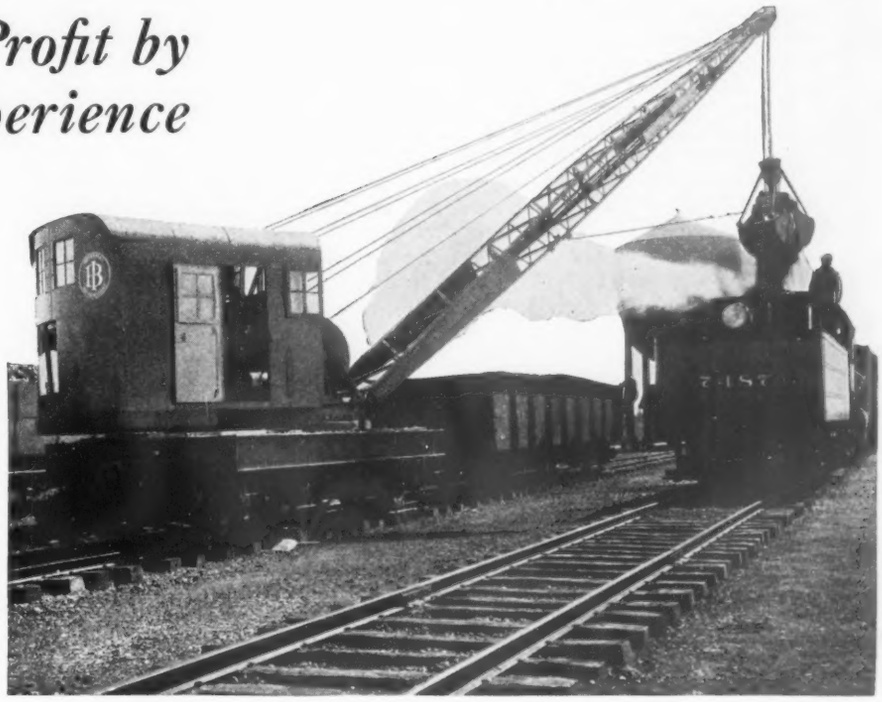
Discussion of the paper brought out that gumming of oils is due to the presence of animal oils or undissolved hydrocarbons which are oxidized by high temperatures or by churning. Air compressors require very little oil for the cylinder walls and light vaporizing oils will make exposive mixtures with the compressed air.



Assembled sections of pipe of the bell and spigot type ready for laying under the Harlem river

JUDGE CRANE VALUES THE WAY BIG USERS DO

You Can Profit by Their Experience



Thirty-ton capacity Gasoline Powered Locomotive Crane coaling a locomotive. Because of their fast operating speeds and dependability, thousands of Industrial Brownhoists are used by the Nation's Railroads for all kinds of handling work.

Of all the locomotive cranes in service, those purchased by the railroads, iron and steel companies and the big utilities are the ones most often bought solely on performance records. Some of these companies use and keep costs on hundreds of cranes, their handling work is hard, and they employ large engineering staffs who know crane design and pass on every purchase. Consequently, their judgement is valuable to anyone interested in the economical handling of materials.

Go to any of these large plants throughout the country and ask their opinion about an Industrial Brownhoist. Let them tell you that no better cranes have ever been built, that they will handle materials at a lower cost per ton and that they will stand up better and last longer. Consider, too, that this is not just idle talk because these same industries have bought far more Industrial Brownhoists than any other make of locomotive crane.

Industrial Brownhoists are sold by our own factory-trained men. Discuss your material handling methods with them and you will find that their experience makes possible many helpful suggestions. There is no obligation, of course.

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.

Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

INDUSTRIAL BROWNHOIST

Improvement in Saw Steels Attributed to Alloys

RECENT developments in saw steels promise little in further marked improvements in the solid tooth type saw, according to Henry B. Allen, chief metallurgist, Henry Disston & Sons, Philadelphia, who addressed the fifth meeting of the Wood Industries division, American Society of Mechanical Engineers at the Hotel Pennsylvania, New York, Oct. 17. Mr. Allen pointed out the conflicting requirements for the one steel for the blade and cutting edge, and that metallurgical research would seem to take the industry for further advances beyond the nature of this metal.

Future changes in saw design putting to use metallurgical discoveries, will require the best thought of the saw user, machine builder and sawmaker. Important factors in steels used for saws are the blade which carries the teeth and the teeth themselves. After heat treatment steel for the blade should combine high elastic limit, good ductility, resistance to impact, resistance to fatigue cracking and uniformity.

Plain carbon tool steel, formerly used for all saws, said Mr. Allen, could not be heat treated to the high elastic limits found desirable for the more modern production rates without an over-sacrifice of other essential properties. For instance, a high elastic limit would be accompanied by brittleness. The usual carbon content of the steels used was 0.85 per cent, although it might range from as low as 0.70 per cent up to 1.10 per cent. The carbon content used depended more on the edge-holding requirements of the teeth, although high carbon often was selected for a thick plate so as to get better hardening.

Quality Is Improved

Nickel was the first alloy used to any extent in saw steel. The object was to produce a stronger blade without sacrificing toughness. The nickel content ranged from 1.25 to 3.5 per cent, and carbon from 0.60 and 1.00 per cent, depending on the use of the saw. The plain nickel steel constituted a real advance in saw steels, and it still is used to some extent. One objection to this steel is its tendency toward a striated, crystalline structure which may result in spalling teeth; another is the sluggishness encountered in tempering, some of the hardened steel structure remaining, with consequent brittleness. These objections more often arise when the nickel and carbon contents are on the high side. However, when on the low side the amount of benefit derived is open to question.

The properties of nickel steels were so interesting that the next alloy saw steels mostly were made with the view of eliminating their weak points by the use of one or more additional alloys. Following other alloy-steel developments, chromium was tried and found to give high elastic limits, but at some sacrifice in ductility. The steel showed a tendency to be "brash," as the old sawmaker calls it, when the steel will not stand considerable cold swaging without checking. Vanadium was added with the object of overcoming this "brash" condition, but without more than a partial cure. It does, however, produce a marked increase in toughness. Nickel-chrome steels are used today for many saws where the ductility requirements are not severe. Chromium, too, in small amounts, enhances the hardening power of nickel steels and so aids the saw manufacturer in hardening the thicker saws.

Alloys Added in Combination

Another attempt to obtain high strength and high values for the other essential properties, has resulted in nickel-molybdenum steels, both elements being present in small amounts. The elastic limit can be made high without sacrificing ductility and toughness. The elastic and ductile properties of steel make possible the tensioning or prestraining treatment essential to a band or circular saw. Mechanical tensioning is done by hammering or cold rolling selected areas of the saw. The cold working elastically expands the steel adjacent to the spots where the force is applied, the later spots being stretched permanently. A steel low in ductility can be given but little deformation by cold working without dangerously approaching the breaking point. A phase of ductility, the ability to be cold worked without rupture, is an essential property of solid tooth saws whose teeth are swaged for clearance.

The property of ductility is dependent, to a large degree, upon the inherent quality of the steel as determined by the method of manufacture and the quality of raw materials used. No alloy will compensate for inferior steel melting practice. Chromium does not assist in developing ductility in saw steel. Nickel does help, and the combination with molybdenum, gives particularly good ductility with high elastic limit. Alloy steels have eliminated most of the body cracks which were fairly common in carbon-steel saws.

The high speeds and feeds at which production saws now are run have introduced new problems. Among these is the matter of gullet cracking, due to repeated stress below the elastic limit of the steel. Cracks of this type can usually be identified by the lines of progressive growth on the adjacent surfaces of the fracture. Sharp angles or corners never should be allowed where there is repeated stress, but the saw user often allows this condition to exist. Gullet cracks, Mr. Allen concluded sometimes occur which cannot be traced to any such self-evident cause.

Consulting Engineer Chosen as Research Associate

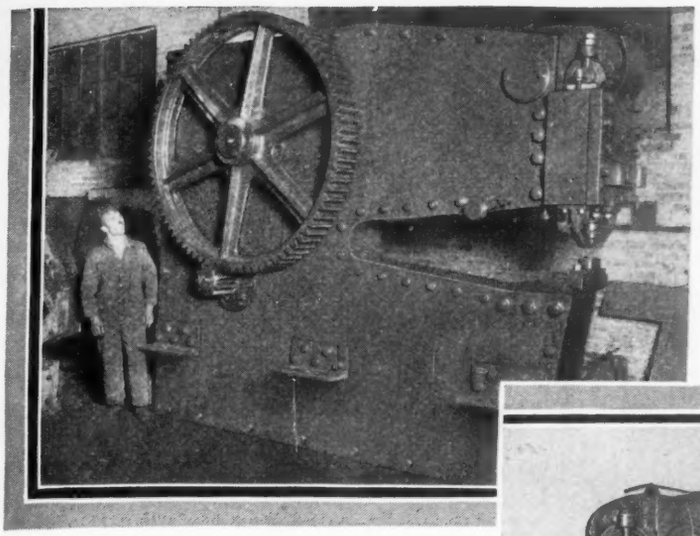
Vladimir V. de Sveshnikoff, consulting chemical and metallurgical engineer, has been appointed by the aluminum oxide abrasive industry as research associate to the bureau of standards, Washington. Mr. de Sveshnikoff is now studying the varying results which have been encountered by manufacturers and users of aluminum oxide in sieving grain to the present specifications, and tests.

From 1919 to 1924, Mr. de Sveshnikoff served as assistant physicist in metallurgical research at the bureau on problems of the ordnance department of the United States army and of the fixed nitrogen research laboratory. He also has acted in private capacity as consulting engineer and has been associated with the navy department in Washington and the Philippine islands. Mr. de Sveshnikoff is a reserve officer of the ordnance department with the rank of captain; is a member of the American Society for Steel Treating and the Army Ordnance association.

Two Pipe Fitting Standards Released for Criticism

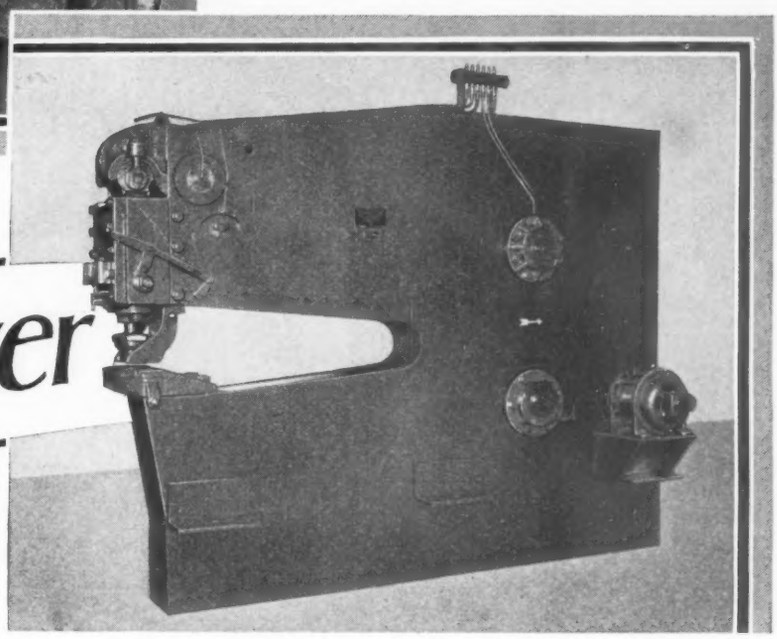
Two new proposed American standards have been submitted to the industry for criticism and comment, by subcommittees of the American Society of Mechanical Engineers. One, proposed by subcommittee No. 2 on screwed fittings of the sectional committee on the standardization of pipe flanges and fittings, outlines standards for pipe plugs of cast iron, malleable iron, cast steel or forged steel, and has been approved by the manufacturers for use in connection with the American standards for 125-pound and 250-pound cast iron screwed fittings and the American standard for 150-pound malleable iron screwed fittings.

The second proposal was released



Shall we WELD?

The Answer



The Buffalo Forge Company, with vision and progressiveness, said "Yes!"

From its complete line of punches and shears, we call attention to one example: Completely redesigned for arc welding, this punch consists simply of two steel plates joined by rigid, arc-welded, steel spacers and throat section. All frame castings are eliminated.

The result: A lighter, stronger punch; 50 per cent more rigid with the same weight of metal; an enhanced appearance to clinch sales; faster production; elimination of expensive machining and assembly; lower over-all costs.

If you contemplate arc welding, you will find it profitable and helpful to get in touch — as Buffalo Forge did — with your nearest G-E office.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

530-90

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

recently by subcommittee No. 3 on steel pipe flanges and flanged fittings of the previously-mentioned committee and relates to standards for steel base fittings. This latter standards is intended as a supplement to the American standard for steel pipe flanges and flanged fittings. Both proposed standards are purely tentative in form and criticisms and comment are desired. Communications should be addressed to C. B. LePage, assistant secretary of the society, 29 West Thirty-ninth street, New York.

Develops New Type Furnace

Continuous operating principles have been applied to the porcelain enameling, industry by the Ferro Enamel Corp., Cleveland, which has developed a new type furnace featuring overhead burning for the enameling of both sheet steel and cast iron. An experimental furnace in the Cleveland plant of the company has indicated that the new principle of porcelain enameling of metal will reduce the cost of production to a minimum.

Variations in Sequence of Cold Rolling Strip Steel Are Almost Unlimited

COLD rolling strip steel, as pointed out by Stephan Badlam, consulting engineer, Pittsburgh, in his paper presented Oct. 24 before the American Iron and Steel institute, New York, consists of a number of steps in addition to the rolling operation proper. Each different class of material, each different finish and temper, and different edges, calls for variations in the process. Variations in practice when producing below tempers are shown below.

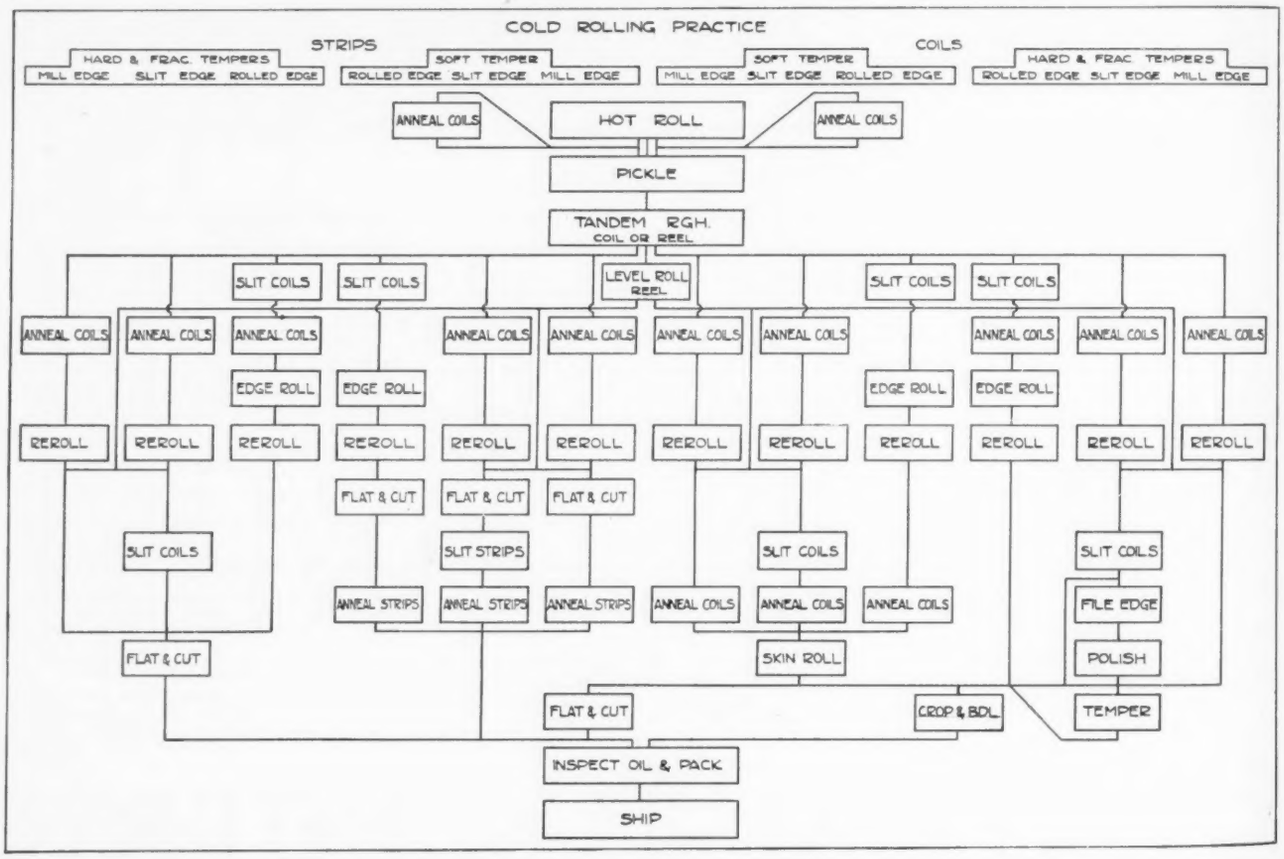
In many cases the sequence of operations may be changed, or while the sequence may be the same, the operations are varied from the standard in line with the past experience on the article to be produced, or similar articles.

In general, the process of cold rolling hot-rolled strip in coils includes cleaning, opening, pickling and washing; cold rolling for reduction, roughing, reel or coil; annealing; cold rolling for temper, rerolling, finishing and reeling; flattening and cutting up; inspection; and packing and shipping. This practice is for fractional tempers, regular finish, natural round or mill edge and in cut lengths.

For hard temper the procedure would be the same, but for the heavier gages the annealing and rerolling would be omitted, the material being finished in a single rolling. For dead soft temper, in the heavier gages, the rerolling for temper would be omitted, or, in the lighter gages, the rerolling would be followed by a second annealing. For sheared edge, an additional operation of slitting would be required, and for finished rolled edge, and edge-rolling operation, either with or without a preliminary slitting operation, would be required. For shipment in coils the flattening and cutting operation would be replaced by cropping ends and bundling.

Plan Advertising Discussion

Porcelain enamel manufacturers interested in forming an association for co-operatively advertising porcelain enameled material will meet at the Cleveland hotel, Cleveland, Nov. 6, to discuss papers on how to advertise their products more effectively. The meeting is to further the progress of this movement which was originated at the American Ceramic society meeting last February.



Steps involved in the cold rolling of strip steel showing the variations in practice when producing the ordinary tempers and edge

Foundry Equipment ENGINEERED for every MODERN Operating Advantage

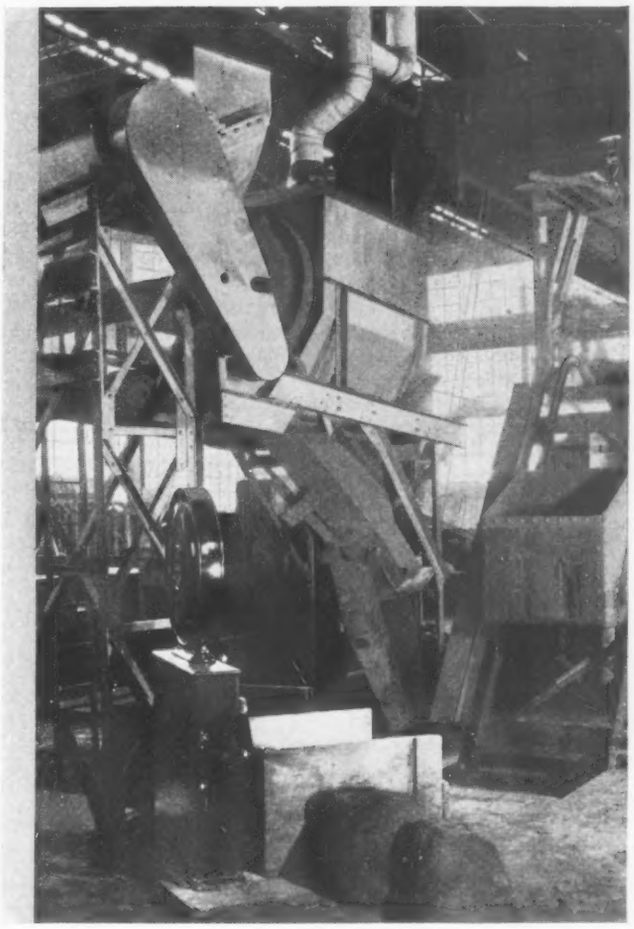
Obtaining Definite Sand Control

Modernized operation at the Farrel Birmingham foundry in Derby, Conn., has put an end to tedious and uncertain hand methods for conditioning sand. An up-to-date sand handling and conditioning installation, engineered by Bartlett & Snow, provides accurate sand control and at the same time holds labor costs at a new low level.

At Farrel Birmingham, sand and additions are proportioned by weight to obtain a control that is more definite and exact than in proportioning by volume. Sand from the receiving hopper is conveyed to a revolving screen provided with dust hood and exhaust fan. From the hopper under this screen, sand is fed into a skip bucket at rest on a platform scale, until the desired weight is obtained. New sand and other additions are also added by weight.

The charge from the loaded skip is emptied into the mill where it is mulled and then carried on a belt conveyor to a squirrel cage conditioner. From the conditioner the sand is discharged into boxes, ready for the molders.

The equipment that performs these operations is compact and simple. It saves time and cuts down labor costs. It eliminates guesswork in sand conditioning.



From the screen, sand and additions are weighed in the skip bucket and conveyed to the mill.

And the benefits of such equipment are available to foundries of every type . . . large and small. Executives of many smaller foundries have discovered that their investment in Bartlett & Snow equipment leads to operating advantages that pay a big return in increased profits. Bulletin No. 63 explains the advantages of Bartlett & Snow Foundry Equipment. Write for your copy today.

THE C. O. BARTLETT & SNOW COMPANY · 6203 Harvard Avenue, Cleveland, Ohio

REPRESENTATIVES IN THE DOMINION OF CANADA
PEACOCK BROTHERS, LIMITED, MONTREAL

REPRESENTATIVES FOR GREAT BRITAIN
PNEULEC, LIMITED, SMETHWICK, NEAR BIRMINGHAM

BARTLETT-SNOW

CONTINENTAL EUROPEAN REPRESENTATIVES
Société Anonyme des Acieries ci-devant Georges Fischer Schaffhouse, Switzerland.

Benefits of A. I. S. C. Work Gain Momentum

(*Concluded from Page* 24)

to make the steel residence a reality."

The annual report of Charles F. Abbott, executive director of the institute, was devoted largely to a review of its activities during the year ending Sept. 30 1930, and a statement of the problems which should be considered by the institute in its future program. Mr. Abbott showed that the steel construction industry, with estimated shipments of 3,390,000 tons for 1930 as compared with actual shipments of 3,553,550 tons in the record year of 1929, has established "a record that places the industry in the forefront compared with most other industries."

Insure Reasonable Profit!

Mr. Abbott digressed from his prepared report in order to put special emphasis on the subject of profits in industry. "Goods that must be sold at a loss represent so much capital and labor thrown away," he declared. "Distress sales inevitably result in a curtailment of industrial activity and unemployment . . . . . The important problem is that of creating conditions that will insure a reasonable profit upon capital investment, and to do so legally . . . . The first practical step should be the appointment of an official or semi-official commission . . . for the purpose of making an intensive study of the situation, analyzing the causes and developing remedies for relief. The publishing of such a report would attract public interest. It would enable trade organizations and industries at large to combine upon the commission's report and exert organized, cooperative effort to bring about such action as the commission may recommend. . . . When sufficient interest is aroused and the public urges it, the commission undoubtedly will be appointed and a practical approach to the problem will then be made possible."

Following Mr. Abbott's address, by motion of George E. J. Pistor, the convention authorized the sending of the accompanying telegram.

Lee H. Miller, chief engineer of the institute, devoted his address to engineering problems of the structural industry. He emphasized the importance of reducing waste in building construction and of perfecting methods of appraisal and of financing so that good design and construction will be encouraged. "Progress in the use of steel in residences will be greatly speeded up," declared Mr. Miller, "when the financial lending interests give proper recognition to the difference between cost and value."

Mr. Miller discussed various new markets for steel, including steel frames for residences, battledeck floors and steel dams. 'The use of steel in the two items—steel residences and floor construction—offers greater tonnage outlets than the present state of the steel industry can supply, but there are other markets just as feasible which indicate that with proper promotional effort the industry is only in its infancy."

Hon. Herbert Hoover,
President of the United States,
White House,
Washington, D. C.

The American Institute of Steel Construction in convention assembled at Pinehurst, N. C., hereby extend to you our loyal support in furthering vour program of construction and employment. We also endorse and commend your suggestion to appoint a commission to study the causes that impair profitable operation of industry. It is our hope that such a commission would recommend a modification of the Sherman act which in its present form we believe to be obsolete and a detriment to successful business operation. The removal of such a hazard would contribute largely to more stable employment in the future.

We believe the country is fortunate in having as its president at this time a man of your ability and experience to cope with the unusual and abnormal economic problems that are the result of world wide conditions. The results of your endeavors will be increasingly effective and appreciated.

—AMERICAN INSTITUTE OF STEEL CONSTRUCTION

Mr. Miller discussed improvements in welding methods and referred to the encouraging expanding use of H-piling in bridge abutments, piers, bents and foundations. The highway bridge field for steel is yielding greater possibilities and in airport structures steel has enjoyed a favorable reception.

Three papers on general problems of the structural steel industry were presented Tuesday afternoon. R. I. Ingalls, president, Ingalls Iron Works Co., Birmingham, Ala., addressed "The Structural Steel Industry and Its Future Possibilities." Mr. Ingalls touched on many details of the business, stating that no executive can hope to manage a business successfully unless he is familiar with these details.

"A solution of many of our troubles," he declared, "lies in our ability to know more of the details of our business and to apply the information intelligently. The man who does not know is the one who generally makes the mistakes that affect us all. Understanding is the sign of progress and success. Collusion is the sign of weakness. Do not be prone to criticise your competitor. Some are bound to be more aggressive, therefore, more successful than others. We cannot all be alike, any more than it is to be expected that every doctor and every lawyer will have the same attainments and reach the same degree of success. What represents a fair price for one company may be a losing one for another, and there is nothing we as a whole can do to completely change this. We can, however, avoid many of our failures and alleviate much of the pain if we know what we are doing. Truth is the distillation of facts, and any one who knowingly goes contrary to truth, deserves to fail, as he will in time. In the conduct of our affairs, it is quite natural that honest differences of opinion should arise. There is no justification in resorting to unethical or unfair means to obtain work. We must not, however, confuse aggressiveness and resourcefulness with bad ethics."

Make Public Steel Conscious

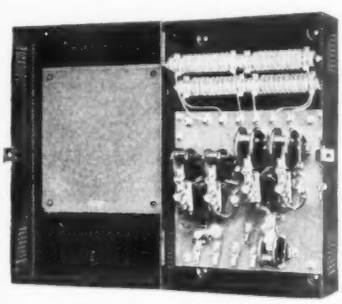
J. G. Shryock, chief engineer, Belmont Iron Works, Philadelphia, spoke convincingly on "Why Structural Steel Should Be Nationally Advertised." He quoted Abraham Lincoln's statement in a debate with Stephen A. Douglas: "Public sentiment is everything. With public sentiment nothing can fail; without it nothing can succeed. Consequently he who molds public sentiment goes deeper than he who enacts statutes or pronounces decisions. He makes statutes possible or impossible to be executed."

With this as a text, Mr. Shryock urged the industry to extend its campaign to make the public "steel conscious." "Public opinion," he asserted, "can be designed and constructed just as certainly and successfully as can steel buildings and bridges.

"During the past few days we have seen that technical opinion can be moulded, using for the purpose, among other things, advertising whose volume has been as small as its results have been big. Today we need the support, not of a few thousands of technical experts, but of a hundred million Americans. We have been playing with advertising; now we must make a business of it. We have been sending a boy to do a man's job, and he has done so remarkably well that now we know both the need and possibility of putting not a man but the power of millions of men and women to work for us."

In conclusion Mr. Shryock, sub-

C-H Magnet at the Milwaukee Plant of the International Harvester Co.



New Automatic Magnet Controller . . . Greater Lifting Capacity . . . Speedier Operation.

Only two-wire, two-position master needed. Discharge-voltage actuates reverse-current switch. Operator simply moves lever to "Drop." His hand returns at once to crane-controls. Current is shut off, reversed, switch opened automatically. Insures current is off magnet on return trip, insures cooler magnet, greater all-day lifting capacity, speedier operation. Furnished as standard on C-H Magnets 39" and larger; also suitable for other magnets 45" and larger.

Profit comes from taking advantage of every margin of superiority

MOST competitive equipment is good, with only a narrow margin separating the worst and best in their class. Yet, taking full advantage of every such margin you can find, often spells the difference between profit and loss "in the books." And it pays always to look for the extra "percentage" in all equipment you purchase.

When buying a lifting magnet such an investigation will reveal to you the superlifting power, the added years of full service, provided by Cutler-Hammer "Red-Top" Lifting Magnets.

Here are some of the outstanding features which make the C-H Magnet stand up under the toughest conditions, often without a single shut-down for repairs. Vacuum-pressure impregnation makes it impossible for moisture to enter the magnet, thus protecting against shorts and burnouts, the chief cause of magnet failure. Micanite-insulation and intimate contact between coil-and-radiating surfaces insure prompt dissipation of heat to the air . . . and an always-cool coil.

The magnetic spool and the strap-wound copper give greater cross-section area of copper which in turn decides the magnet's lifting power. The ruggedness of the body, the toughness of the pole shoes, insure that a "Red Top" will take the severest punishment.

And the new C-H "automatic drop" Control Panel not only speeds up the number of lifts per unit of time but also affords entire safety to men and equipment.

These features and many others, showing the superiority of C-H Magnets, are described in the booklet "*Modern Metal Handling Methods.*" A copy will earn its place in your files.

CUTLER-HAMMER, Inc.
Pioneer Manufacturers of Electric Control Apparatus
1267 St. Paul Avenue
MILWAUKEE : WISCONSIN

CUTLER HAMMER

Red Top Heavy Duty Lifting Magnets

(A-332

mitted this proposition: "During the coming year the American Institute of Steel Construction should celebrate its tenth birthday by commencing to build favorable public opinion in a manner and to an extent that will be proportionate to the opportunity before us and commensurate with the major position our industry occupies in the nation."

1930 Tonnage High

Dr. Frank Parker, professor of finance, Wharton School of Finance and Commerce, Philadelphia, presented an address "Economic Perspectives in the Structural Steel Industry." Referring to the good showing made by structural steel, he pointed to the fact that the tonnage of fabricated structural steel for the first eight months of 1930 exceed by more than 4 per cent the average first eight months' tonnage for the period 1925-1928 inclusive. "Comparing the fabricated steel tonnage for the first eight months of 1930 with the tonnage of the five-year period 1925-1929—and let it be observed that this includes the good year of 1929—the year 1930 is only 1½ per cent less than the first eight months' average for the five-year period. It is submitted that these figures are reassuring rather than alarming, begetful of confidence rather than depression."

Dr. Parker emphasized the importance of research. "In the order of size of expenditure for research per plant per year, the more important industries rank as follows:

	Average Annual Research Expenditures
Chemical and allied products	$105,000
Automobile	100,000
Rubber and its products	100,000
Metal working plants	68,300
Food and kindred products	47,000
Paper and pulp	38,400
Textiles	20,000
Rolling mills and steel plants	16,200
Leather and its products	15,200
Lumber and its products	13,600

"The average expense for research in per cent of capital invested for all industries for which data were available was 1.03 per cent. The range of variation in average expense in per cent of capital invested for the ten foregoing industries was from 0.04 to 2.04, the former figure representing the expenditure of rolling mills and steel plants and the latter figure chemical and allied products.

"There seems to be no logical reason why this research program should not extend to the phases of production, marketing and distribution affecting the structural steel industry in its entirety as well as to technical engineering subjects. Each phase of this research program should be motivated by the desire to enlarge the market and expand the profits of steel generally and of steel constructors especially."

F. H. Frankland, director of engineering service of the institute, presented his annual report, in which he touched on co-operation with engineers, architects, staffs of technical schools and public officials. He stated that during the year an additional district engineer had been engaged and urged that provision be made for five more in order that some of the present 12 districts may be reduced in size to permit more intensive effort.

Among other addresses which received attention were those on gypsum fireproofing by Henry Schweim, chief engineer, Gypsum association, Chicago and Clark Davis, chief engineer, Structural Gypsum Corp., Linden, N. J.

Edward H. Cushman, special counsel, Philadelphia Builders' exchange, Philadelphia, in speaking on "Bonds on Public Work—The Need for a Uniform Law," outlined existing legislation under four subdivisions: Federal system, Ohio system, additional bond system and miscellaneous systems. Mr. Cushman explained how under these systems the principal contractor on a building must furnish to the public agency owning the structure a bond to insure payment of debts for labor and material. He showed the advantages and disadvantages of each plan and suggested certain points which should be included in a uniform law for bonding on public work.

R. B. Thomas, counsel to the committee on code of trade practice, New York, discussed several features of the code adapted last year at Biloxi and declared it should have the active backing of an enforcement body.

James A. Farrell Advocates Policy of "Live and Let Live"

(*Concluded from Page* 24)

due to the fall in values of basic commodities and to the underlying world causes for such decline. I am confident that in the end stabilization and recovery will develop from intelligent management. The spirit of "live and let live" is a necessary doctrine of modern business, and no satisfactory substitute has been found for the Golden Rule, whether in the field of economics or any other phase of existence.

While competition in industry may be termed euphemistically the life of trade, it must be healthy competition, because carried to the excess which leads to destruction of competitors, it is harmful to business and destructive of national prosperity. The middle ground must be found in legitimate co-operation combined with legitimate competition.

Expansion of capacity, without the realization of commensurate consumption, has forced upon us the present problem of promoting better distribution and enlarged markets.

Business exists for making profits. When profits disappear, business likewise disappears. The satisfaction of labor working for adequate wages, of the consuming public for an adequate supply of goods at reasonable prices, of the investor for a fair return on his money, of the government for an unimpaired source of tax returns, are all dependent uniformly upon the profitable operation of business.

This problem of earning a profit, however, is properly left to the discretion of business management. Consequently management is in duty bound to apply scientific thinking and planning in effecting better methods for the stabilizing of business prosperity.

By co-operative effort we have effected economies through standardization, simplification and the elimination of waste. Inefficient plants and improper selling methods are not entirely extinct, and the latter will not serve to offset the failings of the former. Changing conditions and accelerated methods are forcing the transition to modernized plants and improved commercial practices.

Eventually business concerns throughout the country will see the need of determining accurate costs and of establishing their sales prices on a basis of total cost plus a reasonable profit. This is the only procedure by which business can permanently endure, and it is the first essential of sound, intelligent management.

As we look into the future we cannot fail to be imbued with optimism and a firm belief in the greater development of our industrial activities. We envision our buildings rising higher and higher and as our demand for transportation increases we foresee the necessity for heavier and wider bridges.

We are extending the use of steel in the erection of all-steel office buildings and residences of all-steel frame with steel floor construction. The art of welding is improving.

Research, educational and sales effort, properly directed, will develop our markets to the benefit of the fabricators and the steel mills. It behooves all to prepare for a greater future by modernizing our own business methods and by having a proper regard for the rights of others.

Removes Scale from Surface of Metal Without Pitting

BY H. R. SIMONDS
Associate Editor, STEEL

A NEW method of removing scale from steel and steel alloys was demonstrated recently at the plant of the Bullard Co., Bridgeport, Conn. The process, which is patented, is known as the Bullard-Dunn process and is essentially a combination of the chemical removal of scale with electroplating for immediate protection of the exposed metal surface.

The equipment for cleaning small parts includes four tanks; one an acid bath, another an alkaline bath, a third containing hot water and a fourth containing cold water. The sequence into and out of the chemical baths and the wash tanks is varied for different kinds of work. In the case of a piece of rusty carbon steel, immersion for two or three minutes in the acid tank then a quick wash in the hot water tank and a further immersion in the alkaline tank produced a clean, lead-coated surface in less than five minutes.

Can Electrify Baths

Both the acid tank and the alkaline tank are equipped with means for electrifying the bath. One electrode from the generator is connected to a series of lead or iron bars which hang close to the edge along each side of the tank. The other electrode is connected to a heavy copper bar which is supported above the center of the tank. The pieces to be cleaned then are hung on this center bar completing the circuit. A current ranging from 60 to 100 amperes per square foot of section area is maintained at approximately 6 volts. The solution in the acid bath includes sulphuric and hydrochloric acids, common salt and water.

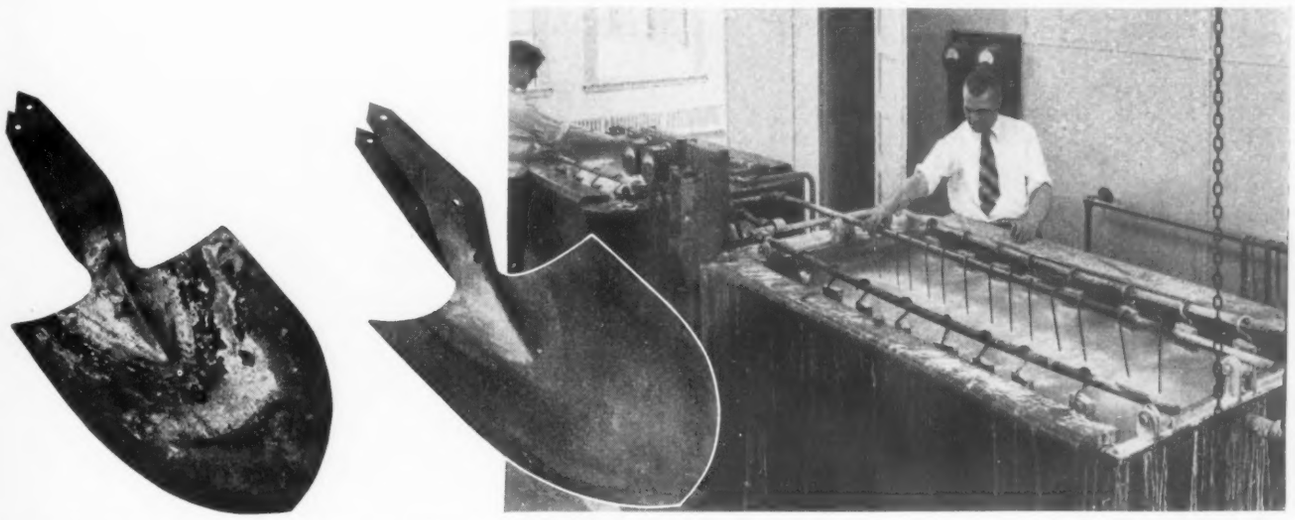
Investigators for the Bullard company have found that such a solution is inexpensive and fully as satisfactory as any other tried. In the alkaline tank any standard electrolyte of the alkaline type may be used and good results have been secured with several proprietary solutions which have been tested. In the acid tank all of the elctrodes are of lead and consist of bars about 1 inch thick, 4 inches wide and 30 inches long.

In the alkaline tank half of the electrodes are lead and the other half iron. The acid tank is lined with lead but this feature is not important and a rubber-lined tank will give equally as good results. The alkaline tank is lined with steel and is equipped with a reversing switch which changes the direction of the current for the removal when desired, of the lead coating deposited during the cleaning process.

Four years ago the Bullard company established a department for the production of bumper bars for automobiles. One of the problems encountered was that of removing the black scale formed on these bars during the heat treatment. The bars could not be polished properly or economically until this scale was removed completely, and it was in the solution of the problem of cleaning these bars that the Bullard-Dunn process was developed. Previous to this development the methods of cleaning, which were tried without complete success, were tumbling, sand rolling, sand blasting, pickling and electropickling. In the case of tumbling and sand rolling it was found that part of the scale actually was driven into the surface by the impinging action thus injuring the surface for polishing. Sand blasting was discarded because of its high cost and the difficulty of cleaning crevices and inaccessible surfaces. Pickling was discarded because of its pitting and etching action on the steel and also because of the hydrogen embrittlement of hardened steel. Electropickling was found to be less satisfactory than ordinary pickling as the addition of current increased the tendency of pit.

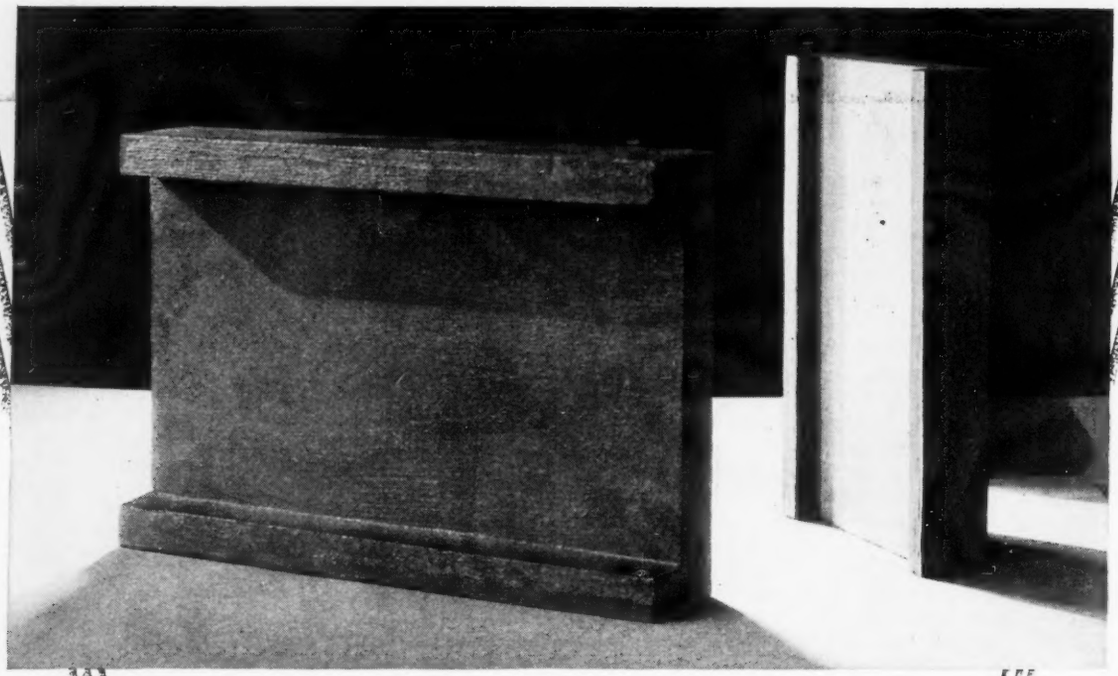
Combinations Tried

Development of the Bullard-Dunn process followed a close study of plating technique. That an electroplate will not deposit on a dirty surface is known to all who are familiar with plating and it is this simple fact which was considered by the investigators. In order to prevent pitting, a combination of plating and pickling was tried in the hope that the plate would be deposited the instant the scale was removed and thus would protect the steel. The results have far exceeded expectations. Not only have the company's engineers been able to work out conditions, which completely protect the steel, but they also have discovered



A thin layer of lead leaves a surface suitable for polishing. Chemical tanks have anodes suspended along the side; parts to be cleaned hang from cathodes at the center

REFRACTORINESS
ONE OF FOUR GOOD REASONS



"CARBOFRAX," the Carborundum Brand Silicon Carbide Refractory has long ago proved its ability to withstand the highest of commercial temperatures.

¶"Carbofrax" Hearths of course have this same necessary quality. They will withstand high temperatures even under extremely heavy loads—without sagging—or softening.

¶All of which means increased production from the furnace—far fewer shutdowns for hearth repairs—more economical operation—better treated ware.

¶Then, too, "Carbofrax" has a remarkably high thermal conductivity—high mechanical strength—resists abrasion and oxidation.

¶You couldn't ask more of a refractory hearth.

CARBOFRAX HEARTHS
REG. U. S. PAT. OFF.

Made of

CARBORUNDUM BRAND
REG. U. S. PAT. OFF.
SILICON CARBIDE

The CARBORUNDUM Company
PERTH AMBOY, N. J.

Pacific Abrasive Supply Co., Los Angeles-San Francisco
Williams and Wilson, Ltd., Montreal-Toronto, Canada
Harrison & Company, Salt Lake City, Utah
Christy Firebrick Company, St. Louis, Mo.
Denver Fireclay Co., El Paso, Texas

(CARBORUNDUM AND CARBOFRAX ARE REGISTERED TRADE MARKS OF THE CARBORUNDUM COMPANY)

quicker, cheaper and more effective ways of removing scale.

Lead has been found most suitable for the protecting plate because of its density when deposited. Protection with this plate is so satisfactory that pieces may be left long periods in the acid bath without any injury whatever. As an example of this feature a delicate watch spring was left in the bath for more than half an hour. It was then placed in the alkaline bath with reversed current to remove the lead deposit and afterward the spring was found to be in exactly its original condition. In obstinate cases of corrosion, such as occasionally found with certain alloys, the treatment sequence may be repeated several times.

A badly rusted ball bearing race was cleaned by the new process during the demonstration. It first was immersed in the acid bath for a period of perhaps five minutes after which on removal small patches of lead were visible throughout the thinning rust deposit. The race was washed and deposited for a few minutes in the alkaline tank after which it was again washed and again immersed in the acid tank. This time the part came out of the bath entirely clean and smooth but covered with a thin coating of lead. This lead coating, as already mentioned, may be removed easily but ordinarily is left on as a protection and a lubricant for certain succeeding operations such as punching and deep drawing. In many drawing operations the scale formed during each anneal would be harmful to the dies and punches as well as to the finish of the work if it were not completely removed. In the case of the chrome-nickel steels a hard abrasive coating of chromic-oxide appears during annealing. The Bullard-Dunn process is said to completely remove this oxide coating, thus greatly increasing the life of tools and dies.

Another advantage claimed for the Bullard-Dunn process is the preservation of exact original dimensions, since the scale only is removed and the steel itself is not touched.

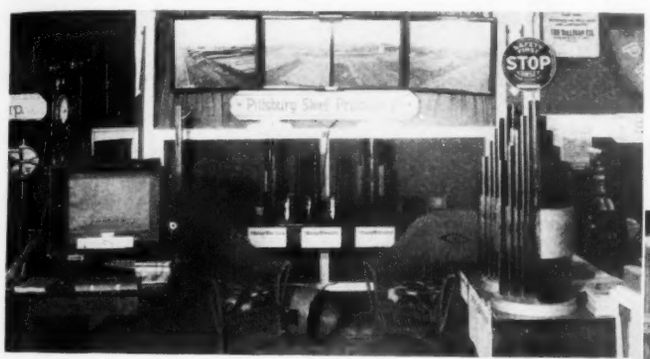
Weights Institute To Meet

The American Institute of Weights and Measures will hold its annual meeting at 33 Rector street, New York, Dec. 2. At this meeting the officers of the institute and the Washington representative will report on the progress made during the past year. The institute has as its purpose the retention of the American system of weights and measures in industry and commerce.

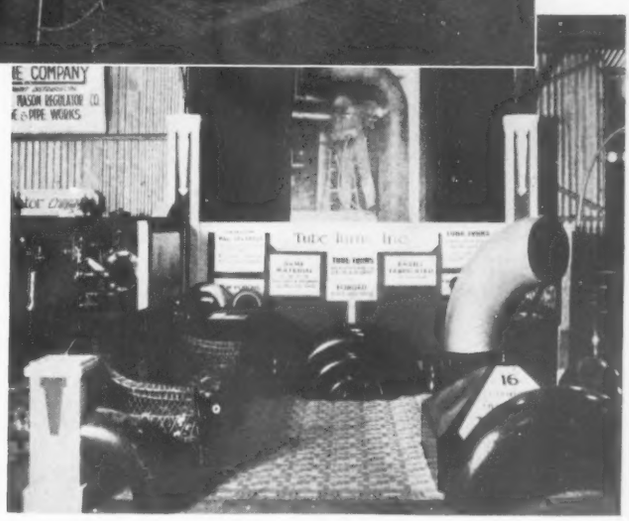
Refractories Institute in Regular Fall Meeting

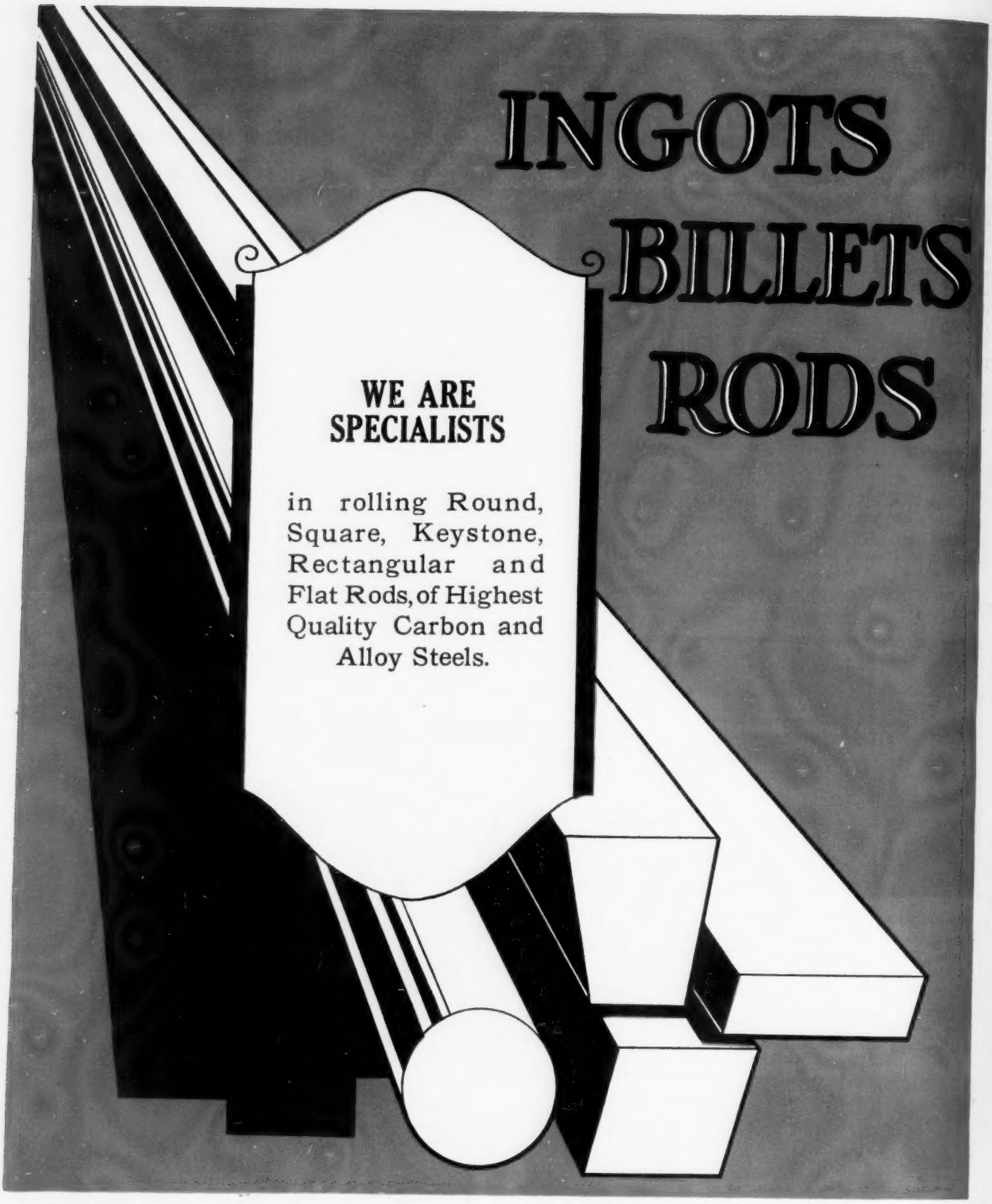
About 45 members attended the fall meeting of the American Refractories institute in Atlantic City, Oct. 23, for technical consideration of refractories manufacture and performance. A discussion on "The Variation in Size of Clay Refractories" was treated from various standpoints including a consideration of the causes of the variation and means for their control. Prof. R. N. King, Ohio State university, Columbus, O., described the manufacture of refractories in Europe. Other subjects included "Effect of Forming Pressure on the Properties of Fire Clay Brick," presented by R. E. Birch, Harbison-Walker Refractories Co., Pittsburgh, and "Insulation of Refractories as the Cause of Spalling," discussed by Stuart M. Phelps, Mellon Institute of Industrial Research, Pittsburgh.

Steel Products Are Featured at Petroleum Exposition



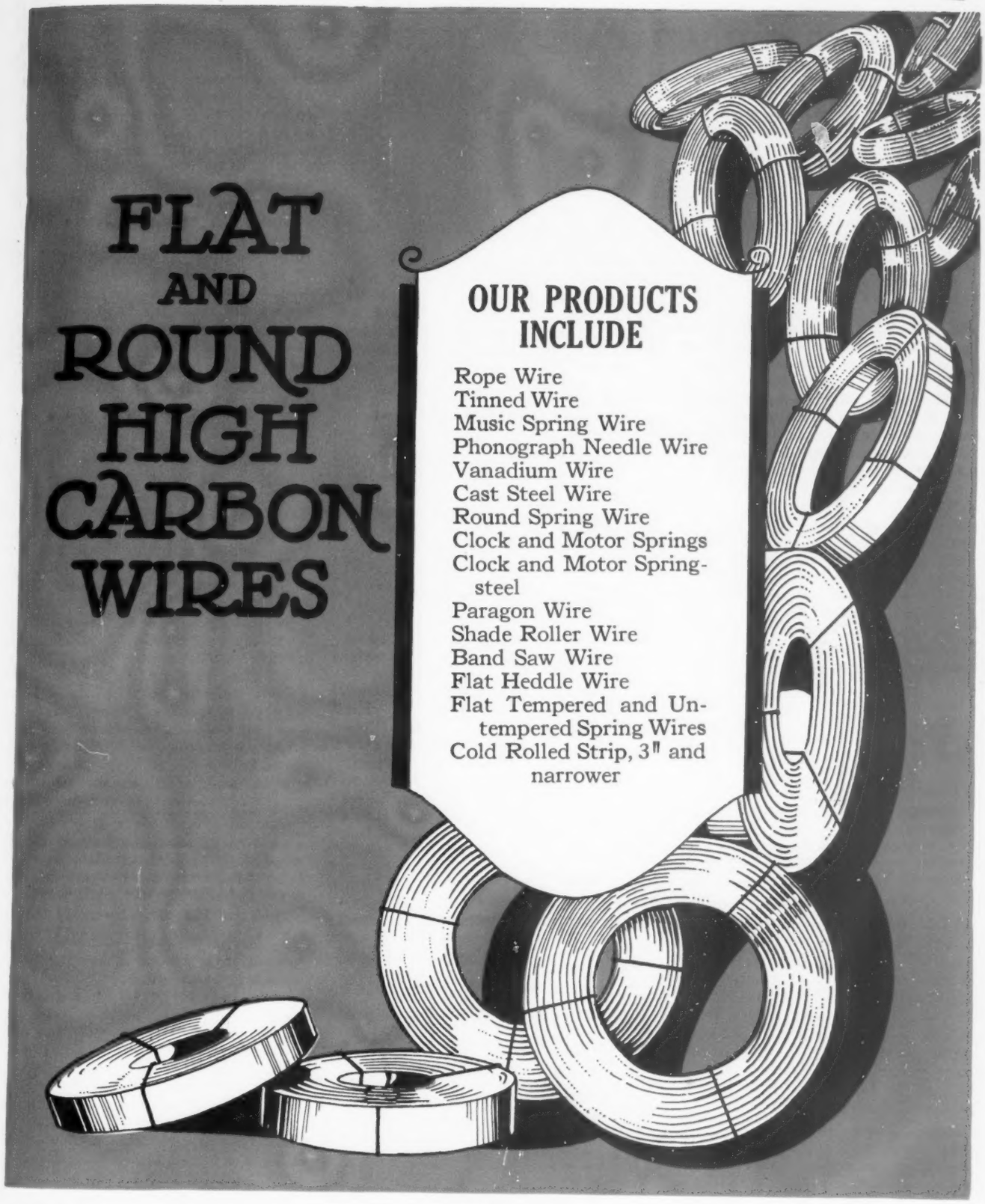
PROGRESS made by steel in its adaptation to equipment for the oil industry was indicated strikingly at the Seventh International Petroleum exposition at Tulsa, Okla., Oct. 7-11. Among the variety of products exhibited were corrosion-resisting steels, tool steels and castings; gas line pipe in plain, seamless, welded and spiral formed types; and welding machinery and equipment.





Washburn Wire Co.

Phillipsdale, R. I.



Washburn Wire Co., Inc.

118th St. and Harlem River, New York, N. Y.

High-Chromium Alloy Steels; Their Present Status

BY E. C. BAIN
United States Steel Corp.

Part II

EXAMINING now the influence of carbon upon the structure of the straight chromium alloys, in the annealed condition, as mentioned in the first instalment of this article, the iron-chromium alloys consist of ferrite in which is distributed the chromium-rich carbide in amount depending upon the carbon content. Some few hundredths per cent carbon may remain in solution in the ferrite, but carbide is usually quite apparent in alloys carrying 0.06 per cent carbon. In the annealed condition the structure is essentially alike for all chromium contents with carbon at constant value; but the structures developed by heating at various temperatures differ with composition.

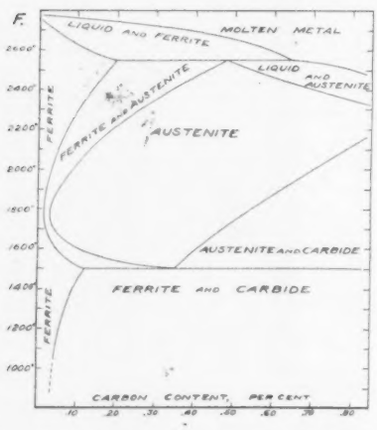


Fig. 6 — Approximate constitutional diagram of 14 per cent chromium alloys with varying carbon content

Alloys of low carbon and 11-13 per cent chromium composition represent about the lowest chromium concentration which suffices to produce a resistant surface. Even in the presence of only a few hundredths of one per cent carbon, the alloy will transform to austenite upon heating to about 1700 degrees Fahr., and if the carbon content is higher it will still all dissolve, thereby transferring the chromium to the solid solution where it is effective in developing resistance to corrosion. This type of material is always so heated and quenched for final use. The product resulting from the quench is a kind of martensite as shown by its structure, not unlike that of Fig. 8, but it is not unusually hard. In this condition it shows high tensile strength and at the same time fair elongation and impact strength.

Carbide Should Be Dissolved

The stainless cutlery steels, although often containing only a little more chromium than the rustless irons just described, usually contain about 0.35 to 0.40 per cent carbon. Accordingly, even though the carbon-free material should contain sufficient chromium to prevent any transformation, the steel upon heating transforms wholly to austenite and the carbide dissolves. Obviously, for stainlessness the carbide should all be dissolved. Quenching such material from about 1850 degrees Fahr. in oil develops a martensite of moderate hardness, distinctly softer than quenched high-carbon steel. The chromium, however, remains in solution and the rust-resisting property persists even after tempering to nearly 900 degrees Fahr. A lower quenching temperature would suffice provided the time at temperature were sufficiently long. The structure of the quenched stainless steel is shown in Fig. 8 and the annealed condition in Fig. 9. Higher carbon content may be employed, with or without additional chromium, but it seems necessary to dissolve sufficient of the chromium carbide to bring the concentration of dissolved chromium up to a certain minimum value in the neighborhood of 11 per cent, if the steel is to be reliably stainless after quenching. One difficulty with the high-carbon stainless steels is the tendency to retain austenite after quenching from the high temperatures required to dissolve sufficient of the chromium carbide. The austenite mixed with the martensite causes the resultant hardness to be noticeably reduced. The strength of the stainless cutlery steels is maintained remarkably well at temperatures approaching 800 or 900 degrees Fahr.

The diagram of Fig. 6 shows the approximate constitution of the 14 per cent chromium alloys as modified by various carbon contents. The typical cutlery steel is not far from eutectoid composition.

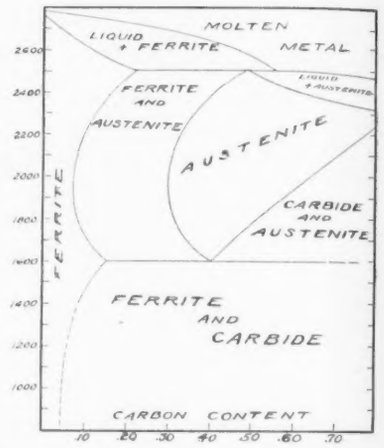


Fig. 7 — Approximate constitutional diagram of 18 per cent chromium alloys with varying carbon content, according to Grossmann and Krivobok

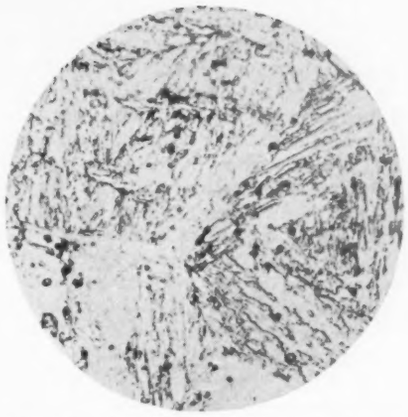
The regular "16-18" chromium rustless iron, a familiar type, is made with a low carbon content and supplies the need for a fairly soft but strong material for a great variety of purposes. Sheets of this metal are particularly useful. It is used in the annealed condition in which the carbon exists as chromium carbide in comparatively few spheroidized particles. The relatively high chromium content insures amply high residual dissolved chromium even when the carbon is satisfied.

If less than a few hundredths of one per cent carbon be present, the alloy is entirely without transformation points and exists at all temperatures as ferrite. Actually, the commercial alloys contain from 0.06 to 0.15 per cent carbon and accordingly at elevated temperatures a portion of the alloy, depending upon carbon

CARBON, in both large and small amounts, exerts definite influences on the structures of the straight chromium alloys, in the quenched and annealed conditions. The accompanying article, the second of three, sketches briefly this effect. The material, to be concluded in an early issue of STEEL, is from a paper presented at the fall meeting of the American Iron and Steel institute in New York, Oct. 24, by E. C. Bain, metallurgist, research laboratory, United States Steel Corp., Kearny, N. J.

content does transform to austenite and consequently changes to martensite upon cooling rapidly. But in the average material the major portion of the alloy remains ferrite at all temperatures and undergoes only grain growth at the high temperatures. This circumstance is of importance in connection with maintaining a fine grain size in finished material. The grain cannot be refined by heat treatment alone as in the case of ordinary steels or the two high-chromium alloys already discussed. The grain size is maintained properly fine by annealing at a low temperature, below the critical point of any of the metal, following a low finishing temperature in the case of hot working or following cold work as in cold-rolled or cold drawn products. Some of the hot work done upon the alloy is actually accomplished upon metal existing as ferrite and austenite and a laminated structure may result at times. Skillful practice, however, overcomes any disadvantages in the final product from this circumstance. Fig. 7 shows an approximate constitution diagram of the alloys containing 18 per cent chromium with the various changes in constituents brought about by varying carbon content. Fig. 10 shows the annealed structure of the 16-18 per cent chromium alloys and Fig. 11 shows the structure in the rapidly cooled metal which had been heated to about 1830 degrees Fahr., thereby forming some austenite "pools" among the ferrite grains. Of course, in the specimen as photographed the austenite had transformed to the characteristic low-carbon martensite of the chromium steels.

For oxidation resistance, particularly at high temperatures, an alloy similar to the type just described but containing about 23 to 28 per cent chromium is sometimes employed. Practically all that has been stated in connection with the 16-18 per cent chromium alloys applies to the chrome-iron alloys, except that the carbide particles which separate out are not dissolved to form pools of austenite except at high temperatures. Such austenite is actually retained unchanged as moderately rapidly cooled. Indeed, an alloy containing about 22 per cent chromium with perhaps 0.50 per cent carbon may be rendered wholly austenitic at about 1925 degrees Fahr. and preserved in this nonmagnetic condition if rapidly cooled.



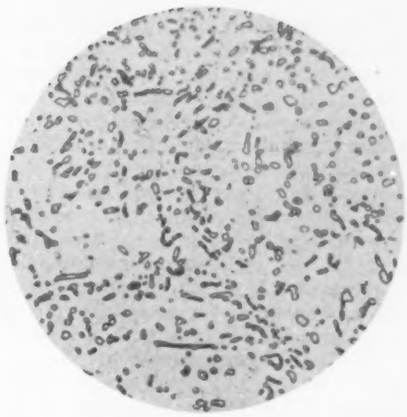


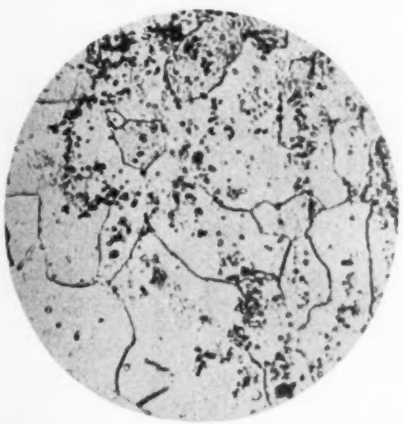
Fig. 8—(Left)—Photomicrograph of martensite appearing in quenched stainless cutlery steel. X2000. *Fig. 9—(Right)—Photomicrograph of the same steel in the annealed condition. Spheroidized carbide particles are in evidence.* X2000

Loss of Ductility Found

In this group of alloys, which are composed of ferrite (with carbides) as annealed, a peculiar type of slow loss of ductility is encountered at about 900 degrees Fahr. The tendency toward brittleness is not noticeably apparent, if at all, at the temperature at which the potenial brittleness is developed, but is found in the metal after cooling to near room temperature. The metal is restored, however, by a short heating to a temperature somewhat above that at which it is injured—1000 degrees Fahr. suffices. The phenomenon is not well understoood but it has been observed that the brittle fracture of the material is transgranular instead of intergranular as would generally be expected. Design of equipment or process employing this material should recognize this tendency. The rate of loss of ductility appears to increase with chromium content; thousands of hours at the temperature required may elapse before serious brittleness is found in the lower chromium alloys of the type, whereas in the high chromium alloys it may develop in a short time.

It already has been mentioned that the presence of appreciable carbon in the straight chromium alloys always causes the formation of austenite at elevated temperatures, even when the chromium content is sufficiently high to render the carbon-free alloys entirely ferritic at all temperatures. At high temperatures the effects of carbon and nickel upon high-chromium alloys are remarkably similar. In respect to the tendency to form austenite, carbon is roughly about 30 or 40 times as effective as nickel. However, at low temperatures, below 1600 degrees Fahr. this similarity abruptly ends, for carbon becomes almost entirely insoluble and is precipitated and so put out of action, whereas nickel continues in solid solution. Although a few per cent of nickel may be present in the carbon-free alloys without altering their ferritic nature, the combination of carbon with nickel is effective in producing austenite at elevated temperature. The combined effect of the two acting simultaneously seems to be greater than would be expected from an estimation of the sum of their ordinary cumulative actions. With some 5 or 6 per cent nickel present with 0.06 per cent carbon, an 18 per cent chromium alloy is just rendered wholly austenitic at about 2100 degrees Fahr.

Smaller proportions of nickel produce mixed structures, ferrite and austenite, in equilibrium with each other. Rapid cooling preserves the austenite precisely as formed at the elevated temperature although, as will be discussed subsequently, it is



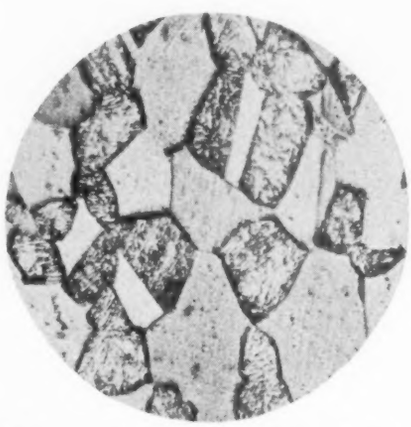


Fig. 10—(Left)—Annealed structure of 16-18 per cent chromium alloy, showing the polyhedral ferrite grains and the fine carbide particles. X1000. *Fig. 11—(Right)—Structure resulting from quenching the same alloy from about 1800 degrees Fahr. Prior to the quench the metal was composed of ferrite grains with scattered regions of austenite which are martensitic as photographed.* X500

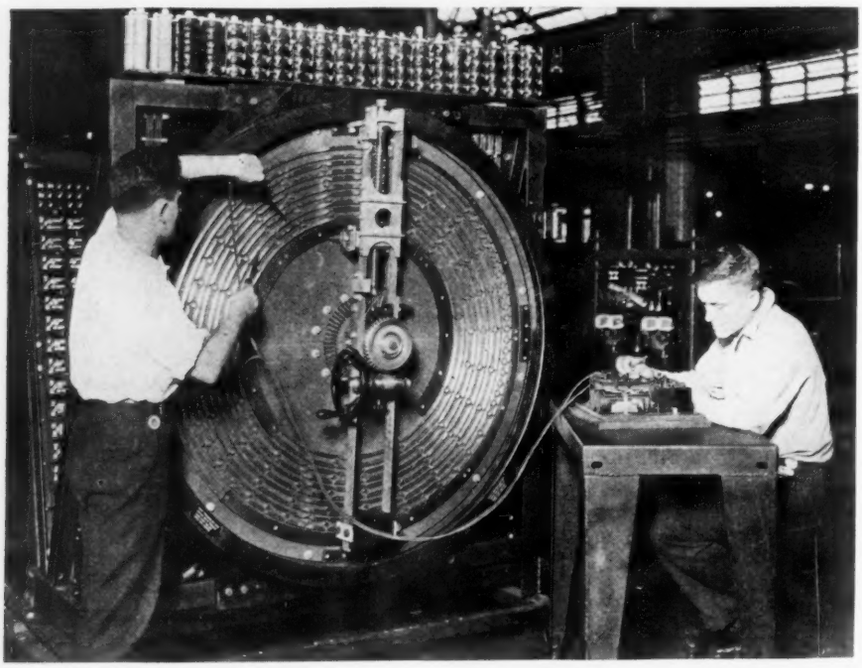
not really stable. If the chromium content is not in excess of about 15 per cent, 6 per cent nickel is more than sufficient to render the metal wholly austenitic at the temperature range around 2100 degrees Fahr., but the austenite so formed in the low-carbon alloys is not preserved even with rapid cooling. Instead the transformation occurs upon cooling and ferrite with martensitic markings results. That chromium renders the austenitic alloys sluggish toward transformation is clearly in evidence.

The austenitic rustless alloys are, then, unstable but persist as pure austenite due to their atomic sluggishness toward any change involving recrystallization or diffusion. In their normal utilization this instability is not apparent and therefore of small practical consequence, but its existence is responsible for some of the unusual behaviors in extraordinary applications. Since the pure austenite of the familiar 18-8 chrome-nickel alloy is in reality only an undercooled condition, it seems expedient to discuss the metallography of this familiar and valuable alloy from the standpoint of its twofold instability, for at room temperature it is undercooled both in respect to its allotropic form and in respect to carbon solubility. The two circumstances will be considered separately in the concluding instalment of this article.

(To be Concluded)

Automatic Blooming Mill Screwdowns Afford Precise Roll Adjustment

IN BREAKING down an ingot in a blooming mill the section naturally is smaller upon completion of each pass, and, consequently the gap between the rolls is made smaller before each reduction. The roll adjustment is made by motor-driven screwdowns controlled by an operator stationed in a pulpit overlooking the mill.



Automatic screwdown adjuster containing more than 230 contacts through which the operation is controlled

To eliminate the human element and thus obtain unvarying precision and uniformity in the operation of screwdowns, the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has designed a screwdown control which functions automatically. Six units recently were built for a mill in the Chicago district. With this device, a predetermined amount of reduction of the distance between the the rolls is provided by plugging in leads at certain points and, when the mill is in operation, the adjustment is provided automatically and at correct intervals.

Using this apparatus, one man can operate the entire mill. When an ingot is to be served to the rolls, the operator throws a pass master switch, which starts the screws turning for the proper adjustment for the first pass. Sights indicate when everything is ready. After the ingot has passed through the mill, the operator moves the pass master switch to the second position and so on. By throwing the switch to the off position the operator may resort to manual control at any time.

The accompanying illustration shows the front of one of the devices and more than 230 contacts through which the operation is controlled. As the screw holder, shown in a vertical position, is rotated, its sliding contact meets the spirally-mounted contacts of the stationary Micarta panel, energizing the circuits that provide the correct spacing between the rolls of the mill.

Research Achievements Outlined in Booklet

Achievements of American research leaders and the importance of research to every industry and to industry as a whole are presented by R. Perry Shorts, president, Second National Bank & Trust Co., Saginaw, Mich., in "The Value of Research to Industry," a booklet published by the department of engineering research, University of Michigan, Ann Arbor, Mich. In the booklet, which is a reprint of an address given by Mr. Shorts at the university, the author states that new ideas were never so vital as they are now and emphasizes the statement that since research leaders have developed more and better machines to reduce the number of workmen, they now should set their energies to finding a method of using this surplus manpower and to solving the question of idle, restless workmen.

To Hold Sixth New England Conference Nov. 20-21

Methods of dealing with present business problems and the question of New England's objectives in the next five years will form the subject matter for the sixth New England conference to be held in Boston, Nov. 20-21. The conference this year will mark the fifth anniversary of the meeting held in Worcester, Mass., in 1925, called by the six New England governors, at which the New England council, all-New England development organization, was formed. Over 900 industrial, commercial, and agricultural organizations of the six states have been invited to participate in the meetings.

Of the 389,399 surplus freight cars in good repair Oct. 8, coal cars numbered 135,844.

From KIDDIE CARS *to* COFFER DAMS

» » » » » » A BOLT FOR EVERY PURPOSE OR SPECIFICATION »

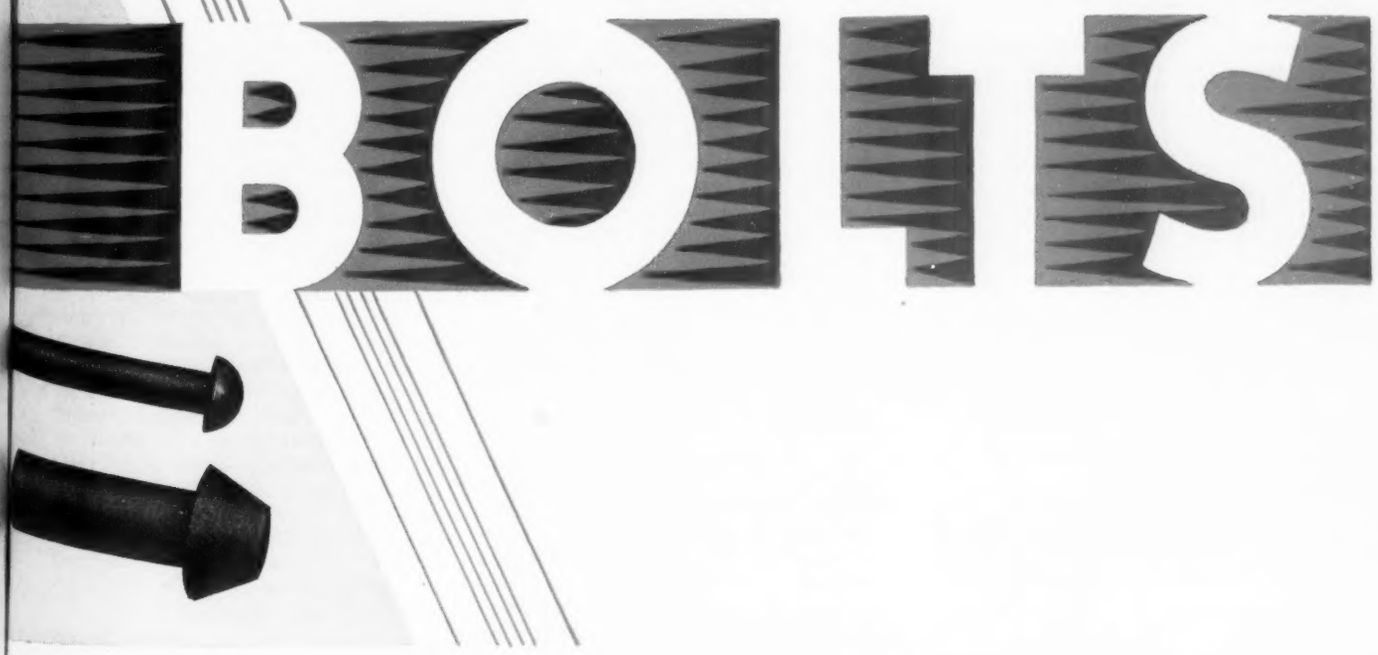
Made in both steel and alloy metal, Oliver Bolts are used throughout the industrial world for every conceivable purpose—from the fashioning of delicate toys requiring tiny bolts to construction projects that demand massive foundation bolts.

Large or small, the manufacture of Oliver Bolts is a fine art—made of that tough enduring kind of steel which has made Oliver famous—threaded and headed in automatic machines which assure absolute uniformity in size, threading and finish.

AMPLE WAREHOUSE STOCKS of every standard size are readily available through Oliver Jobbers. NATIONAL DISTRIBUTION of these famous Oliver products make them as NEAR AS YOUR TELEPHONE. Special sizes can be made to your order, quickly and economically.

Whatever may be your requirements in bolts—THINK OF OLIVER—an outstanding trade name in Bolts and Nuts.

OLIVER IRON AND STEEL CORPORATION
PITTSBURGH, PA.
Branch Offices in the Principal Cities



Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Cold Upsetting

Principles and limitations of cold heading, explained by S. Hillman, in Metal Progress, October 1930, *p.* 58, 2 *pp.*, 4 *illusts.*

Cold upsetting is typical of the trend of modern progress in that it utilizes the raw material to the maximum extent and reduces to a minimum the amount of scrap produced as a necessary by-product. The amount of metal that can be moved, and at the same time controlled in its movement, has a certain relationship to the diameter of the wire or rod being used. Strain distribution and the granular deformation are dependent on several variables of which the most influential are: shape of upset, design of tools, use of the tools, ductility of the metal and grain size of the raw material.

—STEEL 11-6-30

FABRICATION:

Polishing Stainless Steel

Process of obtaining a mirror-like finish on steel of stainless quality, discussed by F. W. Sturdevant, in Abrasive Industry, November, 1930, *p.* 50, ¾-*pp.*

Much depends on the original surface of the metal. Small, stamped, spun, or drawn articles presenting smooth surfaces are buffed readily by the use of a fine-count cotton buffing wheel operated at a peripheral speed of 10,000 to 15,000 feet, cutting down with special composition made for this purpose, and coloring with chromium oxide. The amount of pressure to be applied can be determined only by experiment on a given stock, and should be variable with the different grades of grits and cuts taken on the work in process. Whatever abrasive is used should be uniform, free from slivers, flats, etc. Tallow or lard oil should be used on the wheels with each operation of polishing. A 14-inch diameter soft muslin wheel, running at 1750 revolutions a minute, headed with a suitable grit, is the accepted type of wheel used for preparing the surfaces to be buffed. The sequence of grits used on wide sheets are Nos. 80, 120, 150 and 180. The sheets are brushed with Tampico wheel, with No. 200 emery cake applied locally; then buffed with any of the fast compositions made for this work, and finally colored with chromium oxide.

—STEEL 11-6-30

PRODUCTION:

Bearing Balls

Hardening, quenching and tempering of high-duty bearing balls, discussed by R. E. Coward, in Black and White, November 1930, *p.* 8, 4 *pp.*, 3 *illusts.*

Medium and large balls are quenched in water while balls under ½-inch always are quenched in oil, water being too severe for their small cross section. Small steel balls under 1 inch diameter usually are heat treated in rotary furnaces. In normalizing the balls are brought to 1300 degrees Fahr. and then allowed to cool slowly in covered receptacles. The same furnaces are employed for the hardening process. In this operation the work is subjected to a temperature ranging from 1480 to 1500 degrees Fahr. and then quenched. Steel balls larger than 1 inch diameter require longer periods of time at soaking temperature and usually are heated in square, oven furnaces of the reverberatory type. A microscopic examination of correctly hardened balls, suitable for high-duty bearings, reveals a fine martensitic structure, free from excess cementite and undissolved ferrite.

—STEEL 11-6-30

Malleable Practice

Continuous pouring system in the malleable foundry, discussed by B. R. Mayne, in Transactions and Bulletin (American Foundrymen's association), October 1930, *p.* 561, 12 *pp.*, 7 *illusts.*

Cupolas are used for melting the cold stock while electric furnaces are employed for refining and raising the temperature. Cupolas are supplied with forehearths in which a soda ash flux is used to reduce the sulphur content of the metal. The electric furnaces are lined with silica. Data on the life of refractories are given. Hand cupola charging is considered most economical. Cupola blast pressure is somewhat lower than in ordinary gray-iron practice, due to the open nature of the charges. Three tons of hot metal is taken at one time from the 10 to 12-ton supply in the furnace. Close laboratory control of both the cupola iron and that in the electric furnace is necessary. From the standpoint of uniformity of cupola operation, the quality of the coke is most important, and the routine test used is that for combustibility.

—STEEL 11-6-30

MISCELLANEOUS:

Steel Arch Bridges

An editorial, Engineering News-Record, Oct. 23, *p.* 639.

On opposite sides of the world two great steel arch bridges are in the course of erection. One, the Sidney Harbor bridge in Australia is the result of British engineering genius; the other, the Kill van Kull bridge at New York City, is an American product. Structural analysis, both mathematically and by model, has been given impetus by virtue of these bridges. The successful rolling of silicon steel plates 2 1/3 inches thick (Sidney Harbor) and of carbon-manganese steel plates 1½ inches thick (Kill van Kull) for such exacting service as that required in these bridges represents technological development of high potentiality. The use of carbon-manganese rivets is of much promise and may in fact transcend in importance all other contributions made by the projects. At Sydney the cable anchorages were untried on a bridge of more than 600-foot span. Yet they worked so effectively on the 1650-foot span and their stresses were so completely under control by virtue of ingenious hydraulic jack and vibration measurements that similar anchorage must command careful consideration when even longer arches are projected.

—STEEL 11-6-30

New Books Worth Reading

SCIENCE ECONOMICS BUSINESS

To Trade with England One Needs This Book

The United Kingdom; An Industrial, Commercial and Financial Handbook; by the United States department of Commerce; 953 pages 5¾ x 9 inches; supplied by superintendent of public documents, Washington, D. C., for $1.75; or by STEEL, Cleveland, for $1.75c, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 8s 9d, postage extra.

Standing at the crossroads of the world, essentially a trading nation, in addition to important manufacturing interests dependent on raw materials from abroad, and buyer of tremendous quantities of foodstuffs, England, the United Kingdom, can not be ignored by any nation seeking markets outside its own borders. America from the days of the early settlements has sold to England in large volume. So dependent was England on southern cotton in the middle of the nineteenth century that cessation of shipments during the Civil war caused great distress to the textile industry in England, which lay idle from lack of raw material.

Relatively an ancient land, entering commerce as early as means of transport was available, a leader in developing shipping to cross the ring of waters girding its shores, dealing with the ends of the earth, importing tremendous tonnages from every land and sending out other tonnages, England bulks large in every trade scheme.

Correct Data Aids Trade

Since knowledge is power, knowledge of the economic situation and habits of England, its resources, needs and finances is necessary to those who would trade with it. To the end that the United States may direct its efforts wisely in seeking trade with the United Kingdom the bureau of foreign and domestic commerce of the United States department of commerce has compiled a volume which is a veritable compendium of information to that end. Not all government publications possess the virtue of practical usefulness but the volume devoted to the industrial, commercial and financial aspects of England is filled from cover to cover with valuable material which can be used by all seeking to establish relations with the British empire or to enlarge contacts already established.

It has been a difficult task to survey in a single volume the complex economic structure of so prominent a manufacturing and trading country and the largest overseas market for American goods. Portions of the book were prepared following publication in 1927 and 1928 of the preliminary reports of the 1924 census of British industrial production, after the appearance of the reports of the Balfour committee on industry and trade of the Board of Trade and after 1928 statistics of overseas trade finance and other matters had become available. These sources give a foundation on which to build the superstructure.

Subject Matter Diversified

Four major divisions are devoted to industry and commerce, banking and finance, the United Kingdom as a market and Northern Ireland. Three chapters of the first part are devoted to general factors in British industry and trade and the next 13 to principal commodity groups. These are prepared to present essential matter regarding production and export and various phases of the British market for imported goods, especially from the standpoint of American exporters. This part also discusses British oversea trade, transportation and communication.

The second grand division deals with taxation of business, banking practice, oversea investments, insurance and public finance. In the third part consideration is given to selection of representatives, advertising, distribution and tariffs and living conditions for Americans. The fourth part is devoted to Northern Ireland. This was added because in the main portion many matters related solely to Great Britain and it seemed advisable to create a separate section for this portion of the empire.

The care and detail lavished on the subject matter of this volume may be illustrated by reference to the chapter or advice to Americans planning to visit or to live in England. This tells of conditions differing from those in the United States as to renting and occupancy of homes, climate and clothing, food, hotels and transportation, credentials, customs examination, registration with police, extension of stay and many other things to which the American is unaccustomed.

The basic economic scheme of Great Britain, which presents the key to its position in the world of commerce, is presented in the introduction to this volume. It is: ". . . The exchange of the country's coal, its manufactured goods, representing the crystallized labor of a dense population, and its services of shipping, finance, insurance and the like, for food and raw materials from overseas." The United States, the report states, exports about 10 per cent of its commodities, while Great Britain exports about 30 per cent. Its exports per capita in 1927 were $76 while for the United States they were $40.

To possess detailed knowledge of the situation and customs of commerce that have grown up and crystallized from a thousand years of trading with the entire world is to be able to make the most of opportunities for trade with the United Kingdom. It affords means for avoiding mistakes and consequent disappointment or losses. This volume comes as near as possible to furnishing the detail that gives the prospective exporter the key to the situation. Its possession affords a ready reference to information to answer a myriad of questions.

For fear the authors might have omitted something of value a bibliography of sources is appended, giving direction to further research if the reader seeks to specialize on any point. This includes Board of Trade and other British commercial and economic publications and a classified list arranged parallel to the chapters of the book. A carefully arranged index gives ready access to subjects.

◆

Directory Is Revised

Directory of Forging, Stamping and Heat Treating Plants, 1931-32; fabrikoid, 328 pages, 5 x 7¾ inches; published by Steel Publications Inc., Pittsburgh; and supplied by STEEL, Cleveland, for $7.50, plus 15 cents postage; in Europe by Penton Publishing Co., Ltd., Caxton House, London, for 37s 6d, postage extra.

This directory, the first to appear since the edition of 1928-29, is corrected and re-edited from information received direct from companies operating forge shops, heat treating plants, stamping plants and railroad shops in the United States and Canada. It also contains a list of officials, equipment

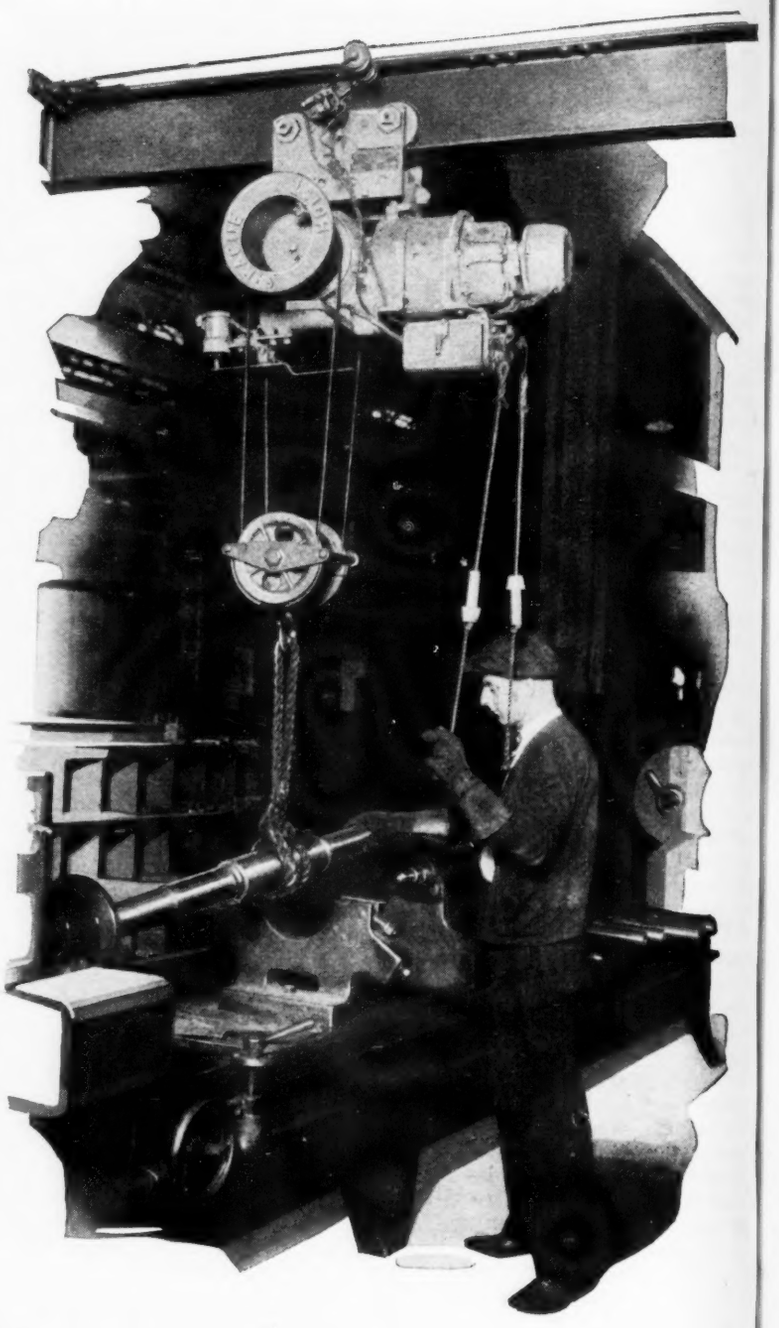
Positive control...

PLUS THE SIMPLICITY OF WORM GEAR DRIVE

PLACING the heavy shafts between lathe centers requires accurate spotting and careful lifting and lowering. Fractions of an inch count! Control must be accurate, positive acting and quickly responsive to the operators touch.

This, Sprague provides...and more! Simplicity is the other feature.. the simplicity of Sprague Worm Gear Drive. Few moving parts... automatic worm load brake... automatic lubrication... complete enclosure! All these performance proved features explain why so many thousands of Spragues are in service throughout industry.

The various types, with push-button or rope control and ranging in capacity from ¼ ton to 6 tons, are fully described in the new Sprague Bulletin S-104. A copy is yours for the asking.



SHEPARD NILES CRANE & HOIST CORP.
Main Office: 358 So. Schuyler Ave., Montour Falls, N.Y.
Works: Montour Falls, N.Y., and Philadelphia, Pa.
Branches in principal cities

SPRAGUE HOIST
DIVISION

THE MOST COMPLETE LINE OF CRANES & HOISTS IN AMERICA

and products manufactured. For quick reference, salesmen will find the book most valuable.

The book is divided into three main sections, the first devoted to forging and heat treating plants; the second to stamping and allied industries; and the third to railroad shops and allied plants. Each section lists the companies both alphabetically and geographically.

◆

Constitution, Heat Treatment of Steel and Cast Iron Given

The Constitution of Steel and Cast Iron by Frank T. Sisco, cloth, 332 pages, 6 x 9 inches, published by the American Society for Steel Treating, Cleveland, and supplied by STEEL, Cleveland, for $3.00, and in London by the Penton Publishing Co., Ltd., 416-17 Caxton House, Westminster, for 15s, postage extra.

During the four-year period from 1926 to 1930 a series of 24 articles discussing the theory underlying the constitution and heat treatment of steel and cast iron were presented in the *Transactions* of the American Society for Steel Treating by the author, and these now have been arranged in book form. The book is divided into two distinct parts of which the first discusses the constitution of steel and cast iron and the second, heat treatment.

Part I contains ten chapters of which the first four deal with fundamental principles, equilibrium diagram, constitution of binary alloys, constitution and structure of hypoeutectoid and eutectoid steels. Chapter V is on constitution and structure of hypereutectoid steels and is followed by chapters on effect properties, constitution of hypoeutectic cast irons, eutectic and hypereutectic cast irons, gray cast iron, and effect of other elements on structure and properties of cast iron.

Part II deals with theory of heat treatment, annealing, normalizing, spheroidizing, theory of hardening, hardening of steel in the first six chapters. Structure of sorbite, troostite and martensite is discussed in Chapter VII. This is followed by chapters on tempering of hardened steel, theory of hardening steel, case carburization, heat treatment of carburized steel, principles of cold working, heat treatment of cold-worked steel, and the structure of alloy steels.

◆

Guide to Heating and Ventilating Is Compiled

American Society of Heating and Ventilating Engineers' Guide, 1930; fabrikoid, 994 pages, 6 x 9 inches, published annually by the society; supplied by STEEL, Cleveland, for $5, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 25s, postage additional.

This is the eighth volume of this engineers' guide to practice in heating and ventilating. It has been enlarged and brought up to date, rendering it more valuable to engineers, contractors, architects, estimators and draftsmen.

It contains reference data on design and specifications of heating and ventilating systems. It is based on transactions of the society, investigations of the research laboratory and practice of members and friends of the society. It contains a manufacturers' catalog data section, a roll of membership of the society and complete indexes.

◆

Uncle Sam's Commerce Summarized in Volume

Commerce Yearbook, 1930; cloth, 678 pages, 6 x 9 inches; published by the United States department of commerce; supplied by STEEL, Cleveland, for $1, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 5s, postage added.

Volume I of the eighth annual issue of this publication, relating to the United States, contains much material of great value for students of business conditions. The second volume will appear shortly, containing similar material from 65 foreign countries.

This publication presents in compact form many statistical and other data originally collected by numerous government bureaus, trade associations and trade journals. This information is not available elsewhere except after search and effort.

◆

Present Details of Wages and Employe Hours

Wages in the United States, 1914-1929; by the National Industrial conference board; cloth, 223 pages, 6 x 9 inches; supplied by STEEL, Cleveland, for $2.50, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 12s 6d, postage extra.

The trend of wages, hours of work and employment are valuable indicators of industrial progress and of changing conditions of business activity. They also serve as a basis for determining the changes in the economic status of wage earners. This study presents the available statistical information for the period from July, 1914 to the beginning of 1930, covering public utilities building trades, railroads, agriculture and 25 branches of manufacturing industry.

The detailed discussion of earnings, hours and employment in manufacturing is based upon data received directly by the National Industrial Conference board from thousands of employers. The wage figures are supplemented by an analysis of real earnings which takes into account the effect of changes in the cost of living.

◆

Foreign Trade Facts Shown in Annual Digest

American Foreign Trade in 1930; cloth, 480 pages, published by National Foreign Trade council, New York; supplied by STEEL for $2.50, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 12s 6d, postage extra.

In this volume is presented the record of the seventeenth national foreign trade convention at Los Angeles in May of this year. Prominent among the facts established at this meeting is that American foreign trade no longer is subject to drastic rises and falls of former years but has reached a point where more than three quarters of our exports are manufactured products. The outlook gained from the information developed at the convention indicates improved outlook for foreign trade as merchandising experience and skill increases.

Among subjects treated in addresses reported in the volume are our Pacific relations, the international bank and the reparations settlement, aviation's part in trade development, international commerce as two-way traffic, shipbuilding and foreign trade, the film as an international salesman, world trade outlook.

A 12-page fact index of all important items renders the subject matter readily available. Verbatim text of nine general and group sessions and three dinner and luncheon sessions is given, in addition to 38 addresses on various phases of foreign trade.

West Coast Founders Elect

The Pacific Coast Founders association recently elected the following officers for 1930-31: President, Charles J. P. Hoehn, Enterprise Foundry Co., San Francisco; vice president, F. G. Johnson, American Foundry Co. Inc., Alameda, Calif.; treasurer, Charles A. Kingwell, Kingwell Bros. Ltd., San Francisco; secretary, Maurice S. Greenberg, M. Greenberg's Sons, San Francisco. In addition to the officers who are also members of the board of directors, the following directors were elected: Fred C. Kobely, Bethlehem Shipbuilding Corp. Ltd., San Francisco; and Elmer S. Anderson, Anderson-Barngrover Mfg. Co., San Francisco. S. M. Truitt continues as manager of the association.

For Spans Up to 50 feet . . .

For Low head-room Operation — "LHR!"

BOX CRANES

Box makes the famous standardized Type "C" Electric Traveling Crane, and "BR" hand operated cranes. And there is the Box Load Lifter Electric Hoist for loads of 500 lbs. to 5 tons. Write us concerning Cranes and Hoists.

"The BOX type "LHR" Crane is a light-capacity, heavy-duty electric traveling crane which takes up less overhead space and gives higher hook lift than any other standard crane.

That is only one of the many reasons why our type "LHR" ("LHR" means low headroom) is chosen by leaders in industry.

The "LHR" is a standard crane built in capacities of one, two and three-tons, and in spans up to and including 50 feet. It is of all-steel, arc welded construction, and is equipped throughout with ball bearings. It requires a minimum of attention, and gives constant, dependable crane service at extremely low cost for operation and maintenance. — It makes available real crane service for those places heretofore considered impractical. — Send for bulletins describing this unique crane.

BOX also makes the famous standard heavy-duty, heavy-capacity type "C" Cranes — The "BR" hand-operated Cranes — and the BOX "LOAD LIFTER" Electric Hoists of from 500 lbs. to 10-tons capacity. — Send for bulletins describing complete line."

Electric Traveling Cranes

Grab Bucket Operating Cranes

Hand-Operated Traveling Cranes

BOX CRANE & HOIST CORPORATION

Janney and E. Ontario Streets
PHILADELPHIA, PA.

Branch Offices — New York, Chicago and Birmingham
Representatives in principal cities.

Established 1878

"One of the Pioneer Crane Builders"

Electric Hoists

Monorail Hoists

Jib Cranes

Special Cranes For Special Conditions

Machine Tools and Plant Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Material Handling Principles Are Important in Machine Tools

MATERIAL handling now plays an important part in the operation of production machine tools and is coming to be an important consideration in the design of such tools. Examples of material handling within machine tools or closely associated with them are: Automatic feeding of bar stock through the spindles of automatic screw machines; the transfer of work from one tooling station to another by the indexing of the spindle carrier of a multiple-spindle machine; the automatic transfer of screws from the cutting-off operation to the slotting operation and thence to a tote box or conveyor; hopper feeding of nuts and screws to tapping and threading machines; magazine feeding of parts to centerless grinders; and the feeding of stock and transfer of work in punch press operations.

Trend Is Apparent

Engineering trends point toward rapid and radical developments of material handling within machine tools, and designers will be required to have just as much proficiency in this direction as they are supposed to have in the art of working metals. Conditions like this are apt to steal upon the machine tool industry in such a way that engineers and designers find themselves in the midst of new problems before they realize it.

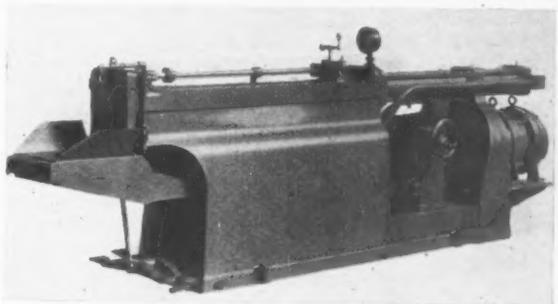
Electrification was an example of this, and after more than 30 years motors and electrical control devices finally are attaining some degree of standardization as far as machine tools are concerned and some progress is being made in the incorporation of electrical apparatus as integral parts of designs. Heretofore much of it had been ill chosen and had the appearance of something overlooked in the original assembly.

Material handling as a distinct branch of engineering is of comparatively recent growth, but nevertheless, rapid progress has been made in certain industries and basic principles are being established. One has only to visit a canning factory, a printing establishment or a safety razor blade plant to realize the lengths to which machine designers have gone in eliminating the human element from the feeding of machines, the transference of material from station to station within a given machine and the disposal of the finished product. Such operations are performed mechanically with speed and precision far beyond that attainable by human hands, and at the same time operators are released from tedious and frequently dangerous routine to spend their time more profitably on work calling for mental as well as manual skill.

Ways are available for saving time in metalworking plants other than by speeding up actual cutting or working operations, and of these, improved methods of feeding raw material into machine tools, transference of work from station to station within them, and removal of finished work and chips from them are assuming increasing importance. Machine tool designers who have recognized this trend are studying attentively the available data on material handling, as well as the advanced applications of this art in fields outside their own. These progressive engineers are working out applications of material handling methods which will have a marked effect upon the development of production machine tools in the next ten years.

Hydraulic Feed Is Used on New Broaching Machine

Oilgear Co., 647-683 Park street, Milwaukee, announces a new hydraulic broaching machine of the horizontal type. This machine, shown in the accompanying illustration, is adapted to high-speed broaching of small and medium size parts. The builder mentions as features; sturdy construction, convenient control, adjustable pulling speed, high return speed, and unusually close limits on work.



Hydraulically driven machine has high speed and power, and is a fast producer of broached work of small and medium size

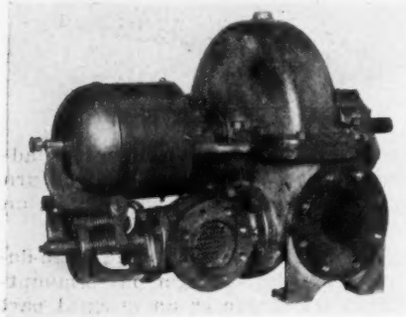
The power unit is a variable-delivery multiple-plunger pump mounted on the frame as an integral part of the machine. The maximum speed of the pump is 860 revolutions per minute, it has maximum delivery of 4800 cubic inches of oil per minute at a working pressure of 1000 pounds per square inch. Peak pressure of 1250 pounds per square inch can be attained. Efficiency at full stroke and load is said to be 90 per cent. The flow of oil is smooth and is proportional to the pull required. Mechanism and tools are protected against overload by automatic relief and by-pass valves. The pump is simple and compact, its working parts have high pressure flood lubrication, and heavy thrusts are carried on roller bearings. The speed of the drawhead is controlled by a handwheel conveniently located on the pump.

The drawhead is started and re-

versed by foot pedals, leaving the operator's hands free to load and unload the work. The drawhead can be stopped or started instantly at any point of its stroke by the foot pedals or by a hand lever. It is stopped automatically at a predetermined point by adjustable cams located on the control rod.

The drawhead is screwed on the ram and guided by bronze liners on large flat steel ways. The cylinder is of seamless steel tubing accurately bored and honed, and cast iron piston rings are used. Coolant is circulated from a reservoir in the frame by a belt-driven gear pump which delivers 14 gallons per minute.

The machine has normal pulling capacity of 12,000 pounds, peak capacity of 15,000 pounds, and working speed ranging from 4 to 33 feet per minute. Maximum return speed is 70 feet per minute. Maximum stroke is 48 inches, diameter of holes in face plate is 4 inches, distance between ways is 7 inches, and vertical adjustment of crossheads is 1⅜ inches above and below centerline of ram. Drive is by a 10-horsepower constant speed motor running at 860 revolutions per minute, which can be either of the foot-mounted or flange-mounted type. The net weight of the machine is approximately 3600 pounds and it occupies floor space of 25 by 147 inches.

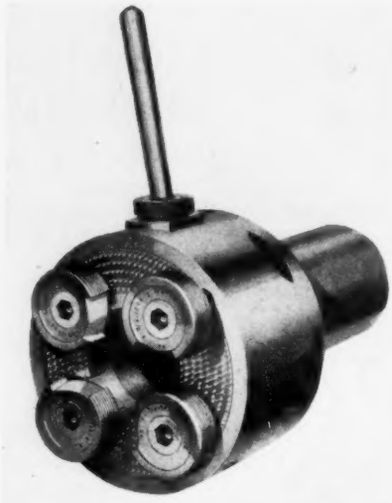


Mechanical-drive turbine is suitable for pump and fan power

Small Turbine Gives Power for Light Machinery

General Electric Co., Schenectady, N. Y., has introduced a small mechanical-drive noncondensing steam turbine which is designed for driving centrifugal pumps, fans and other industrial equipment at speeds between 1750 and 3600 revolutions per minute. An illustration of this machine appears herewith.

The turbine follows the general design of the standard line of mechanical-drive turbines built by this company. The construction is simplified as far as possible without sacrificing dependability and reliability. It is a single-stage machine, with two rows of revolving buckets. The wheel casing is split horizontally for easy access to internal parts, the steam inlet and exhaust pipes being connected to the lower half. Sensitive speed regulation is given by a new type of centrifugal governor with weights pivoted on knife edges to cut down friction. In addition, an emergency governor is provided which is entirely independent of this regular service governor.



These unique circular chasers offer unusually long service life

◆

Opening Threading Die Has Novel Circular Chasers

National Acme Co., Cleveland, announces a new opening threading die of the nonrevolving type. This tool, as shown in the accompanying illustration, is equipped with a new type of quick removable circular chasers which are double edged to cut either right or left-hand threads. Any one of the chasers can be replaced without affecting the performance of the entire set, and unusually long life as well as long runs between grinds is claimed for them.

Removal of chasers and blocks is accomplished in 30 seconds by unscrewing a knurled thumb nut on the side of the cup, which allows the removal of the resetting lever, which in turn allows the cup to be slipped back far enough to uncover the ends of the T-slots, from which the blocks then can be withdrawn. The removal of two screws allows the entire head to be dismantled for cleaning, which is simple because there only are four major parts. All parts are hardened and vital surfaces are ground.

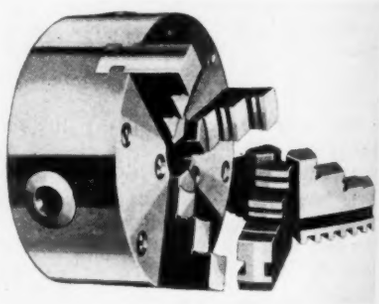
The circular chasers are double edged circular thread forming tools which are held firmly but adjustably by hollow set screws and serrated buttons to hardened steel blocks whose faces are ground to the helix angle required by the pitch and diameter. One set of chasers will cut either right or left-hand threads of any diameter within the capacity of the head and of the pitch for which they are designed. It is necessary, however, to use different chaser blocks for each different diameter, both right and left-hand, as the face angle is different for each pitch and its direction is reversed in the case of left-hand threads.

The new die head is built in seven sizes ranging in maximum diameter capacity from ⅜ to 3¾ inches.

◆

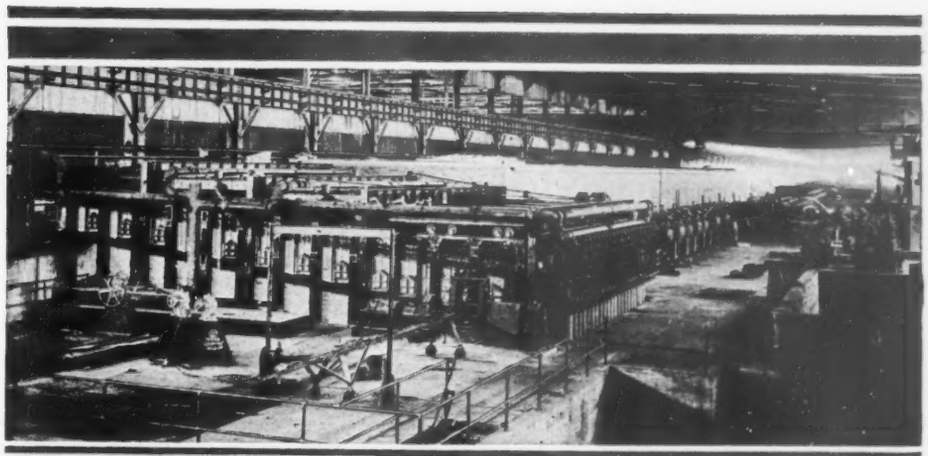
Geared Scroll Chucks Are Strong and Accurate

Westcott Chuck Co., Oneida, N. Y., has put on the market a line of improved universal lathe chucks of the bevel gear operated scroll type. These new chucks, one of which is shown in the accompanying illustration, are designed and built to give accuracy and at the same time to have the necessary strength to withstand the strains imposed by modern production methods, such as occur when tungsten carbide tools are used to their maximum efficiency.

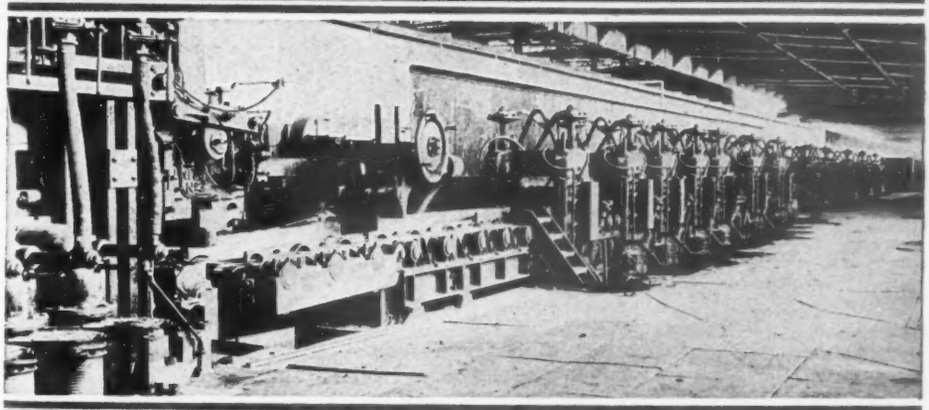


Accurate scroll chuck is designed to stand tungsten carbide conditions

One-piece bodies are used, those of smaller size being machined from forgings while larger sizes are made from electric steel castings. Alloy steels of high tensile strength are used for jaws, scrolls and pinions, these parts being heat treated to give the highest possible strength and durability. As indicated by the illustration these chucks will be furnished with two sets of jaws, one set being for either outside or inside



View of Inland's new merchant bar mill, showing the straight line continuous arrangement of furnaces, mills, shears, etc.



Billets leaving the furnace are cut to predetermined lengths for rolling the proper sized sections by the shear shown in the foreground.

Finishing end of mill. This view shows the vertical shearing equipment where the finished product is gauged and cut to length.

UNITED

ENGINEERING *and* FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

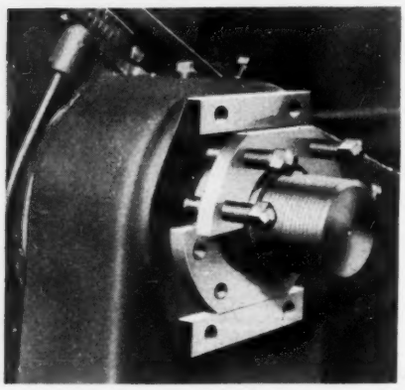
ROLLS AND ROLLING MILL EQUIPMENT

chucking, at customer's option, and the other set being reversible. The complete line will comprise 12 standard sizes ranging from 3 to 24 inches, and sizes above 24 inch will be made to order.

◆

Improved Bushing Simplifies Alligator Shear Repair

Canton Foundry & Machine Co., Canton, O., has developed a new type of fulcrum pin bearing for alligator shears which allows replacement without dismantling the machine. The accompanying illustration shows the method of removing the bushing, the upper half being partly withdrawn.



Method of removing halves of new type of shear bearing

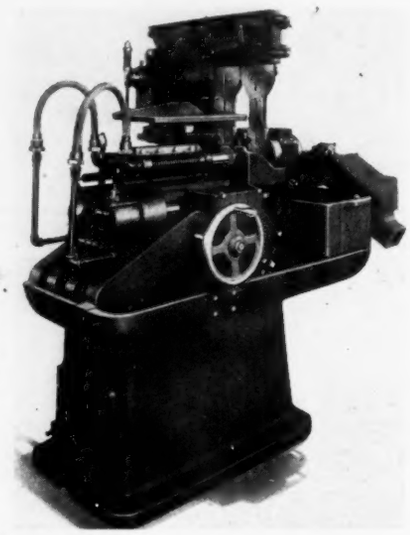
A step-down fulcrum pin is used which, with two castellated nuts, serves as a tie to prevent spreading of the shear bed. To rebush the shears, the castellated nuts are removed, then the hardened steel collars and cast-steel clamping plates are taken off. The four cap screws taken from the clamping plates are inserted in tapped holes in the bushing flange and serve as pulling screws to draw out either or both of the halves of the bushing. The bushings are of gun metal, which gives long life. Rebushing takes less than an hour.

◆

Nut Tapping Machine Uses Stationary Bent Taps

Automatic Nut-Thread Corp., 3617 North Eighth street, Philadelphia, has brought out a new bent tap nut threading machine. This tapper, an illustration of which appears herewith, will handle U.S.S. or S.A.E. hexagon and square nuts from ¼ to $\frac{7}{16}$-inch diameter.

The machine has two tapping spindles fed by a single hopper of the rotary disk type. The taps remain stationary and the nut blanks are revolved. Should one of the spindles become clogged, the nut pusher automatically compresses and the other spindle continues to operate until the obstruction is removed. Each spindle has a separate centrifugal pump which forces coolant through a flexible steel hose in the tapping spindle and throws a stream directly on the tap. Easily accessible pick-off gears are provided for changes in tapping speed and lead. All gears are of steel and run in oil baths. Every important shaft runs on ball bearings. The standard machine is fitted with a 7½ x 3-inch clutch pulley for belt drive. Provision is made for the application of a motor on hinged brackets at the rear of the machine under the pan.

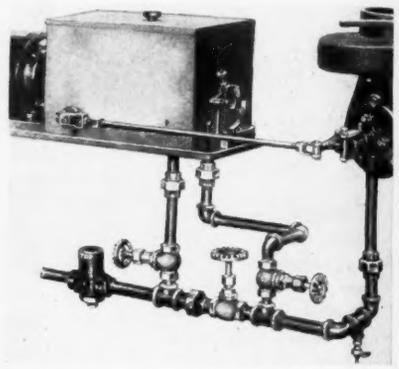


Double spindle machine taps nuts rapidly and accurately

Burner Control Operates on "High-Low" Principle

Johnston Mfg. Co., 2825 East Hennepin avenue, Minneapolis, has brought out a line of valveless automatic controllers for industrial oil burners. The accompanying illustration shows one of the controllers and its application to a burner. The maker claims the positive oil feed to be a special advantage as it is not affected by solid or semisolid sediment and therefore insures constant delivery of proper quantities of oil regardless of quality. This is particularly important in connection with furnaces requiring a reducing atmosphere.

The apparatus consists essentially of a simple metering pump with automatic delivery adjustment, directly driven by a constant speed motor, and operating in conjunction with an adjustable crank which is linked to the air throttle of the burner. While intended for single burners, the unit can be made to control more than one burner under favorable conditions. Operation is on the "high-low" principle, and the unit is not intended to operate "on-off" burners. It is designed for use with any standard control pyrometer or control thermometer.



Control insures constant fuel delivery regardless of oil quality

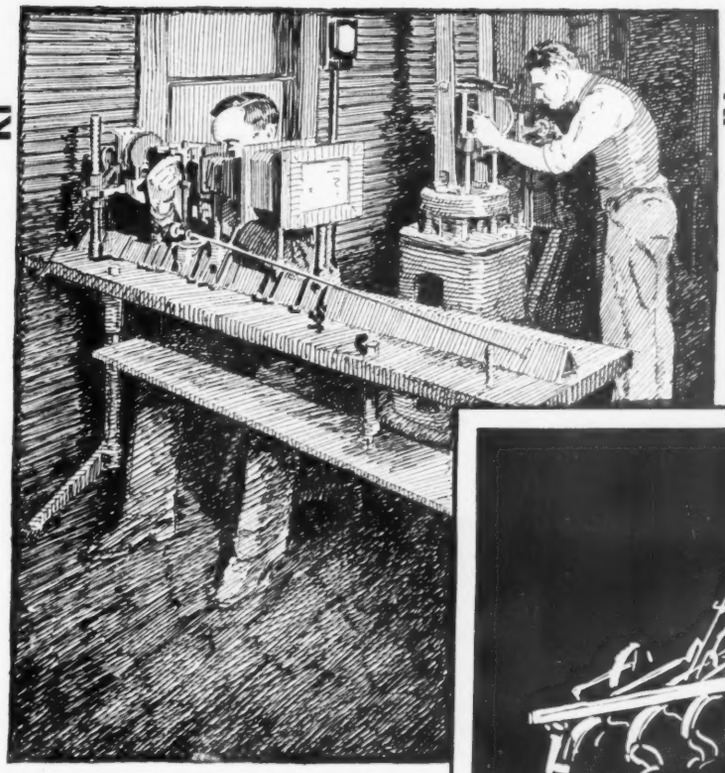
◆

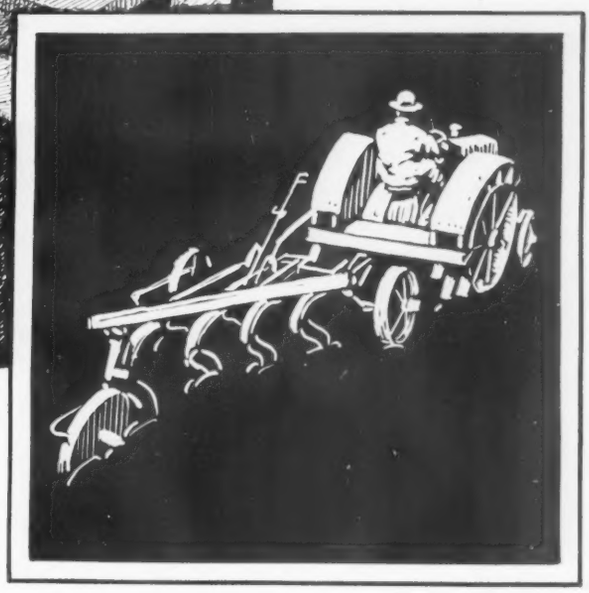
Precision Machine Employs Diamond Boring Tools

Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, has brought out a diamond boring machine to handle precision work on a production basis. This machine, shown in the illustration on Page 90, is designed so that at one loading of the work in a single fixture, both rough and finish boring operations can be performed by means of diamond or tungsten carbide tools. This eliminates a rough boring machine, also extra handling and an extra operator. Minimum stock can be left for finishing because of its concentric distribution.

Bed Absorbs Vibration

The base is a box casting of heavy section, thoroughly cross ribbed to insure rigidity and to absorb vibration. Compartments for oil and coolant are incorporated in it. The ways are of generous proportions, one being a V while the other is a flat. The heavy table has a water drain pan at at each end and a 20 by 25-inch fixture pad in the center, in which there are T-slots. The maximum stroke is 16 inches and the ways are never uncovered. Hydraulic feed is employed, a cylinder being clamped to the bottom of the table as close as possible to the ways. Tubular double-end





But Improving Metals and Machines

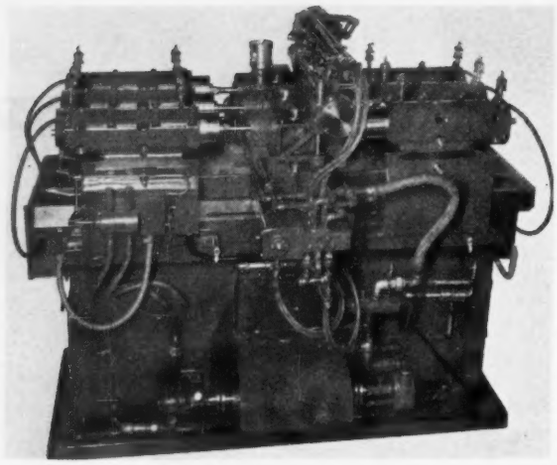
Enameling Stock
Auto License Plate Stock
Nickel Plating Stock
Full Pickled Sheets
Electrical Sheets
Copper Bearing Sheets in all Finishes
"Wabik" Metal — (Special Vitreous Enameling Stock)

While it is true that all the swords have not yet been turned into plowshares, considerable progress in that direction has been made. And Empire Steel Corporation is proud to have a prominent part in the movement. Empire Steel Sheets are being used more and more for the making of agricultural implements. The dominant trend of our time is toward peace and agriculture is primarily a peaceful pursuit.

EMPIRE STEEL CORPORATION
Mansfield, Ohio

Sales Offices: New York-Philadelphia-Cleveland-Detroit Chicago, 520 No. Michigan Ave.—Indianapolis—St. Louis

Steel Sheets



Multiple - spindle precision machine uses diamond or tungsten carbide tools in the production boring of pistons, connecting rods, cluster gears, main bearings, and generator and motor frames

piston rods are used with ends anchored to end walls of the base. Oil enters through the hollow rods at 100 pounds per square inch pressure.

Cast integral with the base at each end are heavy spindle bridge supports. One is finished flat while the other is a V. The spindle bridges have liberal end adjustment to allow wide range of setting and the setting is held by bolting to the rails. The boring heads are mounted in U-shaped bridges which span the table. Two T-slots running crosswise to the machine hold the boring spindle units. Between these two T-slots is a machined slot carrying two spindle bracket adjusting screws. The spindle brackets have large bores, finished their entire length. They are split on a 45-degree angle and by means of four screws the spindle housing, motor stator and rear bearing housing assemblies are locked in perfect alignment. The individual built-in spindle motors are rated at ¾ horsepower and run at 3600 revolutions per minute. The assemblies, completely tooled and set, are interchangeable.

Cycle Is Automatic

Automatic control is by valves operated by dogs which permit any operating cycle to be attained by a few simple adjustments. Stopping and starting at any point without disturbing the automatic cycle is accomplished by a manual control valve at a central operating point. Each spindle is controlled by a limit switch and individual brake. The machine illustrated is tooled up for rough and finish boring of three automobile pistons at one setting. One set of spindles carries roughing tools, while the opposite set carries finishing tools, and the holding fixture is hydraulically operated. Other typical applications include boring of connecting rods, motor and generator end frames, cluster gears and interchangeable main bearings, and other automotive details of close accuracy.

The machine complete weighs approximately 6600 pounds and occupies 14 square feet of floor space.

Continuous Mixing Machine Conditions Foundry Sand

Beardsley & Piper Co., 2541 North Keeler avenue, Chicago, has brought out a new foundry sand muller of the continuous type. The machine, which is shown in partial section in the accompanying illustration, consists of three main parts; the muller wheels, the endless conveyor apron below them, and a sand hopper at the end of the apron.

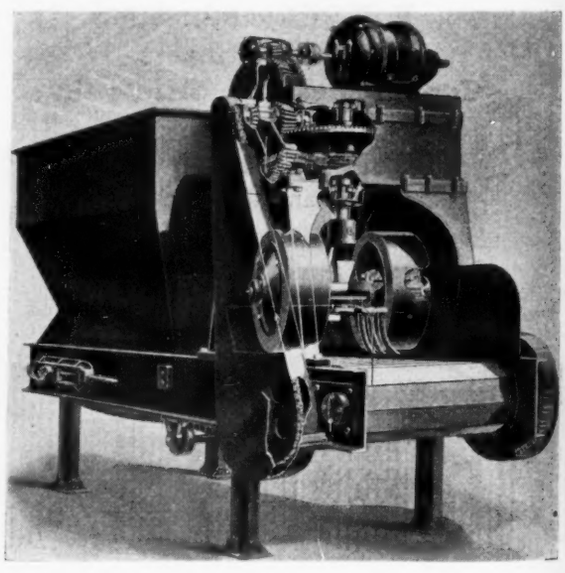
A heavy semisteel casting supports the driving mechanism of the muller unit and also serves as a base for the driving motor, the whole assembly resting on legs bolted to the main frame carrying the apron conveyor. The muller wheels are suspended from their gear housing, and are self aligning and adjustable for wear. The shaft which drives them runs on tapered roller bearings. The motor drives direct through helical gears which run in an oil bath and their shafts run on roller bearings. The apron conveyor is driven from an extension of the bevel pinion shaft by means of a roller chain.

The muller wheels are shod with heavy rubber tires which are held in place by four lugs such as used on standard automobile rims. The conveyor on which the wheels run consists of steel sections secured to three strands of heavy roller chain by attachment links. The chains travel on 60-pound railroad rails and the tops of the apron sections are protected by ⅜-inch wearing plates which are easily renewable. Sand plows can operate within ¼-inch of the conveyor surface. The conveyor travels at about 13½ feet per minute and the sand is mulled and plowed approximately 20 times before being discharged.

Adaptable to Conditions

The sand hopper has a capacity of 5 tons and is provided with a gate and leveling device which will distribute the sand on the conveyor in any depth from 1 to 6 inches—4 inches being recommended. The complete machine is mounted on a strong under structure of fabricated steel with legs designed to suit particular types of sand handling systems.

The standard machine has capacity ranging from 20 to 40 tons per hour. When required, a twin unit consisting of two sets of mullers operating over a conveyor running at 26 feet per minute can be furnished, this having a maximum capacity of 80 tons per hour.



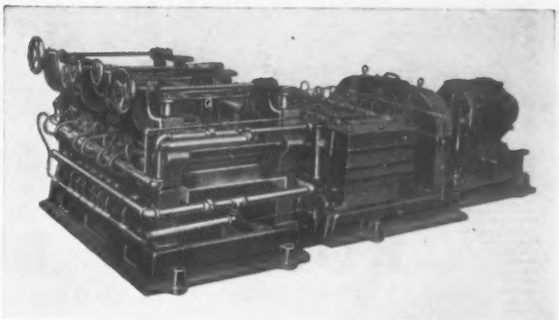
Heavy rubber tired wheels rolling around a circular track, a set of plows, and an apron conveyor work in conjunction to condition foundry sand rapidly and thoroughly

Sheet or Strip Leveler Has Water Jacketed Bearings

Sutton Engineering Co., Park building, Pittsburgh, has brought out a sheet or strip leveler for use in direct connection with normalizing furnace installations. This leveler, shown in the accompanying illustration, is equipped with hardened and ground rolls, the bearings of which are water jacketed and lubricated from a cen-

tralized system. The bearings are sealed against oil leakage and against penetration of foreign matter.

The rolls are driven by a system of herringbone gears which give smooth action and prevent backlash. The gears run in oil, in oil-tight housings. The spindles are flexible and means are provided for individual adjustment of the rolls, which are held under spring tension. Pressure can be concentrated where it is needed. A feature of the machine is the ability to set the top bearings so that the rolls operate in crossed position, thereby removing crosswise strains in the metal.



Rolls of this water-jacketed leveler can be adjusted at angles to each other, thereby removing crosswise strains in sheets and strips

◆

Double Crank Press Raises Bed by Main Drive

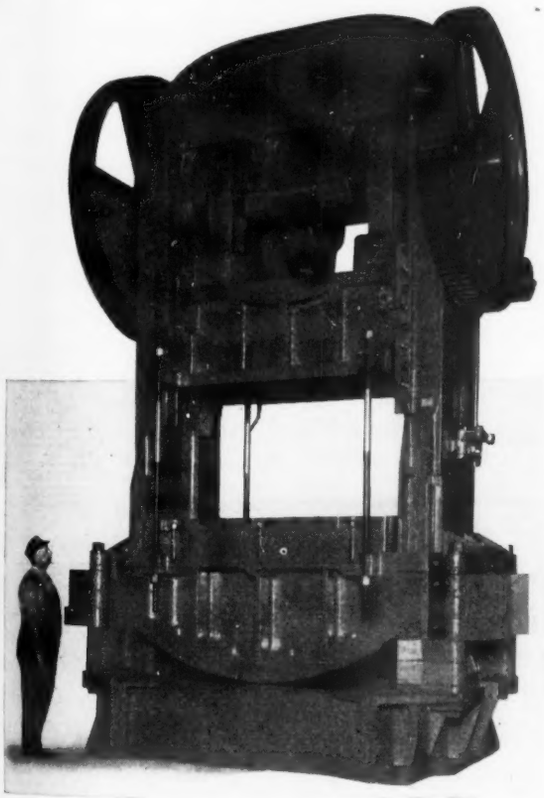
E. W. Bliss Co., Fifty-third street and Second avenue, Brooklyn, N. Y., has brought out an improved double-crank press with adjustable bed, shown in the accompanying illustration. The bed which is gibbed to the uprights, is raised by the slide by means of four long bolts lifting on open lugs at the corners. If the adjustment is upward, the crankshaft is revolved to bottom center, the lifting bolts tightened evenly, gibs slacked up, and as shaft revolves to top center, the bed is raised the length of the stroke. The necessary number of pivoted supporting blocks are then swung into support the bed, the operation being repeated if necessary. When within thickness of one block of position, the slide adjustment is used for final setting. While this lacks some of the convenience of adjustment by individual motor-driven screws, more solid support, permanent parallelism and entire absence of machinery in the foundation pit are advantages. Reduced price is also important, particularly where bed adjustments are infrequent.

Method of Slide Adjustment

The press has one piece, nonadjustable connections, slide adjustment being effected by a hollow screw below the wrist. Wrist sockets slide in bored guides in the slide. The screws are true compression members and are extensions of the wrist sockets. They are fitted with long bronze nuts geared to an adjusting motor. Locking is by check nuts actuated by worm shafts at each end of the slide.

A safety washer inserted under the main nut, collapses under excessive load, relieving the slide about ⅛ inch, which is sufficient to protect the press against damage from double feeding or unduly thick pieces. By running the slide down until the end of the screw clears the washer, replacement can be made through an opening in the upright.

Drive is from a motor mounted on the crown, by multiple V-belts direct to the flywheel. Short centers permit location of the flywheel inside the back brackets, a neat and compact arrangement with oveall width not exceeding crankshaft length. The clutch is built into the flywheel, brake is separate from clutch to avoid heating, and both flywheel and shaft run on tapered roller bearings, and being comparatively short and without overhanging, the shaft requires only two bearings. The size of this press is indicated by comparison with the man in the illustration. The method of raising and blocking the bed also is apparent.



By means of long bolts connected to the slide, the bed of this big press can be adjusted up and down over a wide range. It is located by pivoted spacing blocks which give solid support at the four corners and which insure exact parallelism

◆

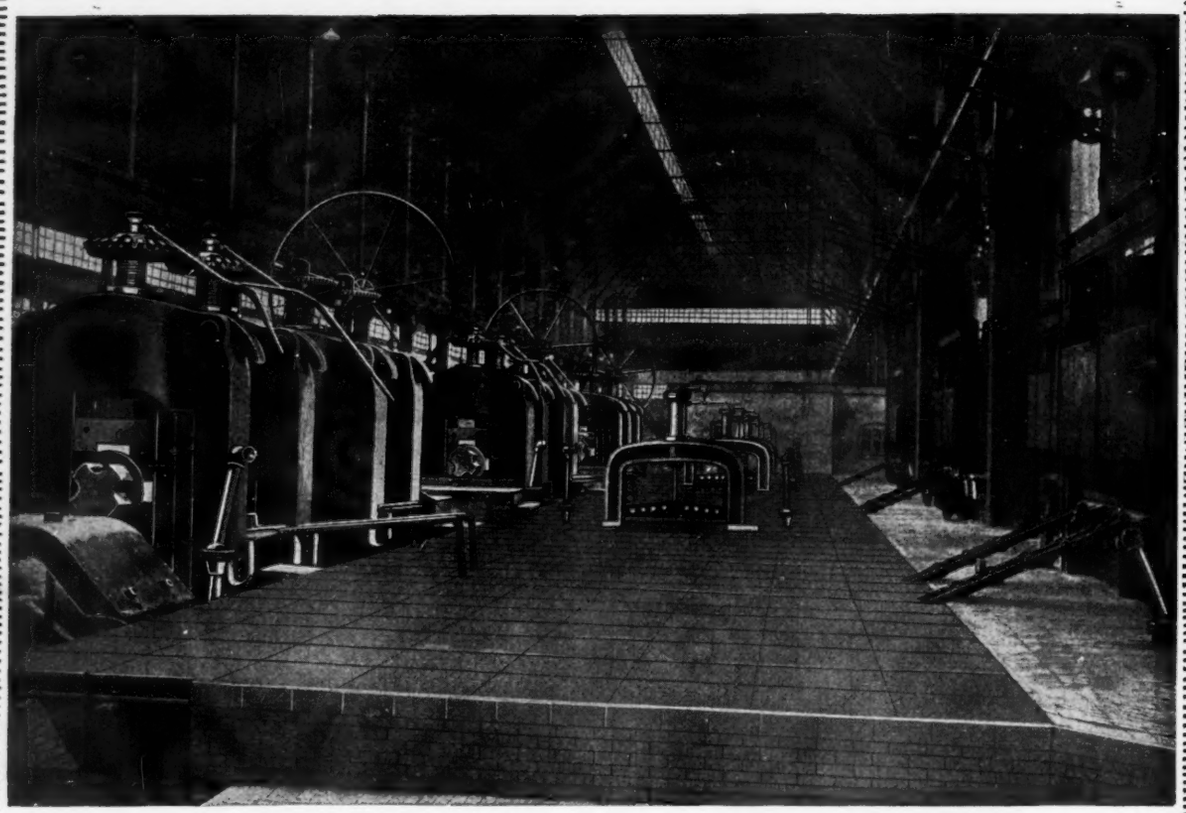
Adoption of Mercury Switch Avoids Contact Corrosion

General Electric Co., Schenectady, N. Y., announces the adaptation of a mercury switch as part of a new float switch for use in atmospheres in which open-type mechanical contacts are subject to corrosion, or where for other reasons it is desirable to enclose the contacts completely. In addition, the mercury contact will stand the heavy duty of throwing ¼ and ½-horsepower motors directly on the line. Float switches are used where control is actuated by the level of liquid in a tank or reservoir. For example, when the water level falls to a predetermined minimum the switch actuates controls which start a motor-driven pump.

The mercury switch consists of a sealed hard glass tube containing a quantity of mercury and having two inleading wires. The tube is constructed so that the mercury forms a continuous stream from one wire to the other when in closed position. In open position the mercury breaks into two distinct pools, one lead-in wire being immersed in each pool with an open space between. The tube is filled with an inert gas.

"NATIONAL"

ROLLING MILL EQUIPMENT



Baird Water Cooled Floors for Sheet and Tin Mills

You will greatly facilitate your production by the use of Baird Water Cooled Standings. The improvement they effect in working conditions causes the workmen to do more and better work per day of service.

Baird Water Cooled Standings are temperature controlled. You can regulate them to suit either summer or winter weather. Installations can be easily made without changing the present layout of your mill.

In this partial list of users there is a total of 165 installations.

American Rolling Mill Co., Middletown, Ohio; American Sheet & Tin Plate Co., Vandergrift, Pa.; Bethlehem Steel Co., Sparrow's Point, Md.; Empire Steel Corp., Mansfield, Ohio; Empire Steel Corp., Niles, Ohio; Follansbee Brothers Co., Follansbee, W. Va.; Follansbee Brothers Co., Toronto, Ohio; Granite City Steel Co., Granite City, Ill.; Inland Steel Co., Indiana Harbor, Ind.; Jones & Laughlin Steel Co., Pittsburgh, Pa.; Kawasaki Dockyard Co., Kobe, Japan; Mahoning Valley Steel Co., Niles, Ohio; The Otis Steel Co., Cleveland, Ohio; Reeves Manufacturing Co., Dover, Ohio; Republic Iron & Steel Co., Niles, Ohio; Republic Iron & Steel Co., Warren, Ohio; Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.; Universal Steel Co., Bridgeville, Pa.

Send us your Specifications

The National Roll & Foundry Co.

Avonmore, Pa., U.S.A.

MANUFACTURERS OF

COMPLETE ROLLING MILL EQUIPMENT

HEAVY AIR FURNACE CASTINGS AND "BAIRD" WATER COOLED STANDINGS

Pig Iron Output Drops Drastically

October Daily Rate Off 8.2 Per Cent; Fewest Stacks Active Since Late 1921 —Railroad Car and Structural Orders Hold Up—Working for Firmer Prices

PIG iron production declined 8.2 per cent in October, on a daily basis, and with a net loss of 15 in active blast furnace stacks, the number in operation Oct. 31 was the lowest in exactly nine years.

October's daily rate was 69,851 gross tons, compared with 75,893 tons in September. From the 115,747 tons of last October, this was a fall of 40 per cent. The October total of 2,165,374 tons was only 4.9 per cent below September, owing to the longer month.

In 10 months, output of pig iron has totaled 27,910,315 tons, 23 per cent below the 36,270,846 tons of the comparable period of 1929. From the first 10 months of 1928 this was a loss of 11 per cent.

Of the 310 potential stacks, only 111 were in blast Oct. 31. Since March, 73 stacks have been dropped. Relating production to capacity, October was a 49.6 per cent pig iron month, against 53.8 per cent for September.

Steel ingot production statistics for October, available next week, undoubtedly will also disclose a decline from September, and as November opens this trend is unchecked. All producing districts except Birmingham, unchanged at 45 per cent, reveal curtailment of two to eight points, indicating a steelmaking rate of 45-48 per cent, compared with 49 last week and 52 two weeks ago. Buffalo is at 54 per cent, Youngstown 52, eastern Pennsylvania 51-53, Chicago and Pittsburgh 50, and Cleveland 21.

Structural steel and railroad equipment buying are noteworthy exceptions to a generally-listless market structure. Automotive requirements show no gain since Chevrolet began specifying for its 1931 line; implement manufacture is retarded by heavy stocks; line pipe inquiry is negligible save for several western lines; at Chicago is heard the first talk of retrenchment on account of inventory-taking.

Producers are resigned to mediocre demand the rest of the quarter, but are increasingly hopeful that recent resolves to hold prices will stick. Many consumers are sounding out the market, sensing that a reservation of tonnage at present levels might be good insurance. As yet, first-quarter inquiry is insufficient to indicate prices. The Pennsylvania railroad's requirements for steel—probably 45,000 tons—for 1500 exceptionally large cars to be built in its own shops will afford a test of prices shortly.

While heavy steel continues 1.60c, base, Pittsburgh, on average business, weakness persists in some of the lighter products. Galvanized sheets are unsteady. The sequel to the reduction of wire nails to jobbers at $1.95 is a downward adjustment of other jobber wire products. Scrap in most districts has weakened further, and at Chicago some grades are the lowest in 30 years. Foreign iron ore prices have been cut so deeply that many eastern users are buying as far ahead as three years.

In addition to the 1500 Pennsylvania cars, the Santa Fe is inquiring for 1560 freight and passenger cars. The Baltimore & Ohio has placed 1000 bodies, of its recent 2000-car program. October freight car orders at 4075 compare with 535 in September and 19,506 last October. Freight car orders for 10 months are 39,632; in 1929, 90,934; and in 1928, 33,147. Norfolk & Western is building 10 locomotives. Chesapeake & Ohio has bought 10,000 tons of tie plates and 5000 kegs of spikes. Track fastening orders at Chicago total 20,000 tons.

Bridges, headed by a 6628-ton structure at Pittsburgh and one for 5000 tons at Cincinnati, account for over half the 38,349 tons of structurals closed this week. New inquiry, of which an 8000-ton bridge over the St. Lawrence river is most important, approximates 15,000 tons. Plates are made active by various projects of the Great Lakes Pipe Line Co., Chicago, totaling 10,000 tons, and 5000 tons each for a navy cruiser, a Great Lakes freighter and a pipe line at San Francisco. Bars, like sheets and strip, suffer inactivity largely because of slack automotive buying.

STEEL's market composite, off 8 cents this week to $31.98, a new low, has fallen 3 per cent in 60 days and is 11 per cent below a year ago.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Nov. 5, 1930)	**$31.98**
Last week (Oct. 29, 1930)	**32.06**
One month ago (October, 1930)	**32.26**
Three months ago (August, 1930)	**32.99**
One year ago (November 1929)	**36.03**
Ten years ago (November 1920)	**63.75**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Nov. 6, 1930	Oct. 1930	Aug. 1930	Nov. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	19.36	20.26	20.76
Basic, valley	17.00	17.00	18.00	18.50
Basic, eastern del. eastern Pa.	17.50	17.50	18.00	19.75
No. 2 foundry, del. Pittsburgh	18.26	18.46	19.26	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del. Phila.	19.26	19.26	19.76	22.26
Malleable, valley	17.50	17.80	18.50	19.00
Malleable, Chicago	17.50	17.50	17.50	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.60	2.60	2.50	2.65
Connellsville foundry, ovens	3.50	3.50	3.50	3.55
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	31.00	35.00
Sheets bars, open-hearth, Pitts.	31.00	31.00	31.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	31.00	35.00
Wire rods, Pittsburgh	36.00	36.00	36.00	40.00

	Nov. 6, 1930	Oct. 1930	Aug. 1930	Nov. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.65	1.90
Steel bars, Chicago	1.70	1.70	1.75	2.00
Steel bars, Philadelphia	1.89	1.89	1.94	2.22
Iron bars, Chicago	1.70	1.70	1.75	2.00
Shapes, Pittsburgh	1.60	1.60	1.65	1.90
Shapes, Philadelphia	1.76	1.76	1.66	1.91
Shapes, Chicago	1.70	1.70	1.75	2.00
Tank plates, Pittsburgh	1.60	1.60	1.65	1.90
Tank plates, Philadelphia	1.80½	1.805	1.805	2.10
Tank plates, Chicago	1.70	1.70	1.75	2.00
Sheets, blue anl., No. 13, Pitts.	2.05	2.15	2.15	2.35
Sheets, black, No. 24, Pitts.	2.35	2.40	2.50	2.75
Sheets, gal., No. 24, Pittsburgh	3.00	3.00	3.10	3.45
Sheets, black, No. 24, Chicago	2.60	2.60	2.60	2.95
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.15	3.20	3.20	3.65
Plain wire, Pittsburgh	2.30	2.30	2.30	2.40
Wire nails, Pittsburgh	1.95	2.00	2.05	2.40
Tin plate, per base box, Pitts.	5.00	5.00	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	13.75	14.80	15.20	16.30
Heavy melting steel, eastern Pa.	11.50	12.00	12.625	15.125
Heavy melting steel, Chicago	10.50	11.55	12.00	13.05
No. 1 wrought, eastern Pa.	14.25	14.25	14.25	16.25
No. 1 wrought, Chicago	10.00	10.95	11.25	13.85
Rails for rolling, Chicago	13.50	14.10	14.50	15.30

Sheets

Market Continues Quiet, with Operations Slightly Lower—Radio Manufacturers Active

SHEET PRICES, PAGE 99

Pittsburgh—Sheet demand is steady at a low rate. Both specifications and new business fail to improve while operations are off slightly at 40 to 45 per cent. Prices lack strength. Black sheets are 2.35c to 2.45c. Galvanized generally are 3.00c, with some tonnage at 2.95c. Prices higher than 3.00c have disappeared. Blue annealed plates continue 1.90c to 2.00c, with autobody 3.40c. Blue annealed sheets suffer less in competition with continuous mill products than do plates, but some tonnage is going at 2.05c. Automotive tonnage remains light, though orders from some interests have improved over the preceding two months.

New York—Demand for sheets is quiet. Black and galvanized generally are 2.35c and 3.00c, Pittsburgh, respectively. Blue annealed plates are 1.90c and sheets 2.05c.

Buffalo—District sheet mills continue to operate at 45 to 50 per cent. Metal furniture consumption is increasing.

Philadelphia—Sheet demand is slow except from radio manufacturers who continue to take a large tonnage. Galvanized now are 2.90c to 3.00c, Pittsburgh; black 2.35c to 2.45c, and highly finished sheets which formerly sold at a differential under common black now generally are bringing the same base price as common black. Blue annealed continue 1.90c to 2.00c for heavy gages and 2.15c for light gages, although the price of light gages sometimes is shaded.

Youngstown, O.—Restriction in sheet orders is reflected in further slowing in operating rates. All of the Empire mills at Niles are down, and operations of the Republic Steel Corp.'s mills at Niles and Warren, and of Youngstown Sheet & Tube Co.'s mills in Youngstown have been reduced slightly. Demand for common grades is more encouraging than that for autobody material. Specialty sheets also are fairly active. Common black are 2.35c to 2.45c, Pittsburgh; galvanized, 3.00c; blue annealed Nos. 9 and 10, 1.90c to 2.00c; No. 13, 2.05c to 2.15c; and autobody, 3.40c to 3.50c.

Cleveland—Sheet specifications still are declining. An inquiry is current for 1400 tons of No. 15 gage blue annealed sheets, 45 inches wide and 240 inches long. Few inquiries are out for autobody and metal furniture sheets. These grades are 3.40c to 3.50c, and 3.60c to 3.70c Pittsburgh, respectively. Black are 2.35c; galvanized, 3.00c. Continuous mills quote No. 10 blue annealed 1.80c and No. 13, 1.95c, Pittsburgh. Jobbing mills will not go that low.

Cincinnati—Sheet bookings keep production schedules at about 50 per cent. Buyers limit orders to immediate needs.

Chicago—Sheet demand has dropped sharply. One producer finds orders more than 20 per cent under a week ago. Recent spurts indicate urgent requirements against extremely low inventories. Black sheet prices continue weak at 2.55c, mills. The 2.45c price has been met but has not become general. Blue annealed sheets are unchanged. Steel barrel and container manufacturers are among leading consumers but demand generally is spotty. Operations average 50 per cent.

St. Louis—Sheet business in this district in October fell below that of September. Specifications continue small. Fair tonnages of galvanized are moving to the South and Southwest.

Birmingham, Ala.—More inquiries are being received for sheets, and the outlook for consumption in the southern states the remainder of this year is encouraging. Prices are steady.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c to 2.45c
Philadelphia, delivered	2.64c to 2.74c
Gary, Indiana Harbor	2.55c
Chicago, delivered	2.60c
Birmingham, base	2.60c
St. Louis, del.	2.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.70c
Gary, base	2.80c

GALVANIZED NO. 24

Pittsburgh, base	3.00c
Philadelphia, delivered	3.19c to 3.29c
Gary Indiana Harbor	3.10c to 3.20c
Chicago, delivered	3.15c to 3.25c
Birmingham, base	3.15c
St. Louis, del.	3.45½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.05c to 2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.44c
Birmingham	2.30c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.19c to 2.29c
St. Louis, delivered	2.35½c
Birmingham	2.15c

AUTOMOBILE NO. 20

Pittsburgh base	3.40c to 3.50c

FURNITURE NO. 24

Pittsburgh	3.60c to 3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, primes	3.65c
Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.95 and 2.05
Cement coated nails	1.95 and 2.05
Galvanized nails	3.95 and 4.05

(Per pound)

Polished staples	2.40c and 2.50c
Galvanized staples	2.65c and 2.75c
Barbed wire, gal.	2.60c and 2.70c
Annealed fence wire	2.10c and 2.20c
Galvanized wire	2.55c and 2.65c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c
Philadelphia, del.	1.80½c
New York, del.	1.88c
Boston, del.	2.00c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.05c to 2.15c
St. Louis, del.	2.00½c

Structural Shapes

Base, Pittsburgh	1.60c
Philadelphia, del.	1.76c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c to 1.65c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.25c to 2.35c
Cleve. base, local del.	1.65c
Do, outside delivery	1.60c
Philadelphia, del.	1.89c to 1.94c
New York, delivered	1.93c to 1.98c
Boston, delivered	2.00c to 2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 1.98c
Philadelphia, delivered	1.89c to 1.94c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 500 tons	1.70c to 1.85c
30 to 200 tons	2.00c
Under 30 tons	2.45c to 2.85c
Chi., rail steel, over 30 tons	1.50c to 1.60c
Under 30 tons	2.10c to 2.50c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel

Bars, Pitts., Chi., Buff., Cleveland	2.00c to 2.10c
Do, delivered, Detroit	2.20c
Shafting (turned, polished) Pitts., Buffalo	2.10c
Do, (turn., ground) mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni	1.05
2100	0.55	5100 .80-1.10 Cr.	0.45
2300	1.50	5100 Chr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Chr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds., sq.)	0.50
4600.20	30 mo.		

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.70c to 1.75c
Hot strip 6 1/16 to 24-in. Pitts.	1.60c to 1.65c
Hot strip, bands 6 in. and under, Chicago	1.80c to 1.85c
Do, 6 1/16 to 24 in.	1.70c to 1.75c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.35c to 2.45c
Worcester, 3 tons, over	2.50c to 2.60c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00 to 41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off

Upset 1 in. diam. and smaller ..... 80-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off

Upset 1 in. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c

Bars

Lack of Tonnage Weakens Market—Prices Are Unchanged—Shipments Are Less

BAR PRICES, PAGE 99

Chicago—With delivery demands moving into the inventory zone, the customary seasonal retrenchment is apparent, plus the generally depressed demands, and shipments of bars and other heavy finished products are more restricted. Operating conditions are unsatisfactory, as roll changes are frequent. The market lacks tonnage specifications, and some views are that several months may elapse before anything like a backlog appears. Few freight car orders are in sight and it appears that gains in implement production this month will be decidedly gradual. Bar mill operations as a whole are 40 to 50 per cent. Alloy mills are about 40 per cent engaged, while rail steel bar mills are on a 60 per cent schedule. Bar mills again are in the lead among finishing departments. One bar producer, due to a few heavier releases, reports a gain of more than 10 per cent in specifications during the week. Soft steel bars are on a 1.70c, Chicago, base, with fewer preferred buying groups. All carload buyers get the 1.70c quotation for straight-section material that does not involve interplant switching.

New York—Common steel bars are unchanged at 1.60c to 1.65c, Pittsburgh, with demand quiet and unchanged. Deliveries average 10 days.

Pittsburgh—Occasional orders for steel bars are being received to replenish depleted stocks, usually for prompt shipment, but they involve only small lots. Total tonnage is little changed from that of recent weeks. The market usually is 1.60c, with 1.65c quoted on mixed carloads.

Cleveland—One seller of carbon bars booked slightly more business in October than in September, but the latter month's tonnage was not noteworthy. New models have not increased automotive requirements for bars appreciably. Bolt, nut and rivet makers are light buyers. A tendency to regard present prices as bottom, or approximately so, and to wonder whether some material ought to be reserved at present prices is noted. Carbon bars for local delivery are 1.65c, base, Cleveland; for outside delivery, 1.60c, Cleveland.

Ordnance department, United States army, took bids Oct. 28 for the Frankford, Pa., arsenal on 187,200 iron wood screws and 17,500 pounds steel wire nails.

Cold-Finished Sales Fail to Gain in October

Cold Finished Prices, Page 99

Pittsburgh—Cold-finished steel bar specifications are off slightly from the volume a month ago. Requirements of the automotive industry lack improvement and demand from most other consumers is little better than that of motor car builders. Inventories of consumers are light and little further curtailment of buying for the purpose of reducing stocks is looked for during the remainder of the year. The market usually is 2.10c.

Cleveland—Closing days of October saw little improvement in cold-finished bars. Automotive tonnage is not showing any gain. That industry as well as other consuming lines continue to purchase in limited quantities as dictated by orders they receive. While an effort is being made to hold the market at 2.10c, Cleveland, 2.00c is often quoted.

Plates

Market Is More Active—Tank, Freight Car and Ship Work Promising Larger Tonnages

PLATE PRICES, PAGE 99

New York—Plates are steady at 1.70c, Coatesville, Pa., with a fair portion of less-carload business at 1.75c. While general demand is spotty, prospects in the railroad field are more encouraging. Approximately 18,000 tons of plates will be required for the 1500 gondolas which the Pennsylvania railroad will build in its own shops. Substantial tonnages also will be required for 2000 box cars for the Baltimore & Ohio and 500 hopper cars for the Virginian Railway. The government has added another light cruiser to its program, requiring 5000 tons. Pipe work includes 800 tons of 48-inch steel pipe for the local board of water supply, gas and electricity, bids to be opened Nov. 6. The municipal department of plants and structures will open bids about Nov. 15 for a ferry, requiring 635 tons of plates. This department will be in the market later for two larger ferry boats, requiring about 2000 tons of steel each.

Philadelphia—Plate bookings have improved in this district but eastern mills are not operating over 50 per cent. The price continues 1.70c, base, Coatesville, Pa., subject to concessions on special tonnages. Eastern mills are interested in an inquiry from the Moore, McCormick Steamship Line on repairs to eight boats in the Pacific trade. A projected Philadelphia gas holder will require 4400 tons of plates and shapes. The Pennsylvania railroad is negotiating for over 40,000 tons of plates and other rolled steel, wheels and axles for 1500 gondolas to be built at its shops in Altoona, Pa.

Pittsburgh—Plate tonnage shows little change from activity of recent weeks. Additional freight car buying brightens the prospects for heavier plate tonnage for car building. Barge awards continue light but production of lapwelded pipe steel accounts for a fair tonnage. The market usually is 1.60c, Pittsburgh, on average lots.

Cleveland—Plate inquiry is improving. A lake steamer to be built soon will take 5000 tons or more. Lima Locomotive Works has purchased plates for the six locomotitves awarded to it by Chicago Great Western. Mills report fairly steady specifications for small amounts at 1.60c, Pittsburgh.

Chicago—Most promising in the plate market is prospective oil tank work. Great Lakes Pipe Line Co. will require about 10,000 tons of plates for its pumping stations and bulk storage terminal as a part of its 6-inch gasoline pipe line project. Miscellaneous tank work requiring about 1000 tons has been closed. Skelp shipments for manufacture of welded pipe at Milwaukee dropped to less than 20,000 tons in October. Plate mills are operating slightly under 50 per cent. Plate quotations are based on 1.70c, mills, despite occasional concessions of $1 a ton from a maker southwest of here.

Contracts Placed

5000 tons, Hetch Hetchy pipe line project, San Francisco, to Western Pipe & Steel Co., San Francisco.

605 tons, 80,000-barrel tank, Sun Oil Co.

Philadelphia, to Warren City Tank & Boiler Co., Warren, Pa.

250 tons, tug, Young Bros. Ltd., Honolulu, T. H., to Bethlehem Shipbuilding Co., San Francisco.

180 tons, approximately, shell tank and fire box plates, for six locomotives, awarded Lima Locomotive Works, Lima, O., by Chicago Great Western, to Lukens Steel Co., Coatesville, Pa., Otis Steel Co., Cleveland, and others.

Contracts Pending

10,000 tons, pumping stations, tanks, and bulk storage terminal, Great Lakes Pipe Line Co., Chicago.

5000 tons, lake steamer at Cleveland; bids being taken.

1700 tons, 38 to 54-inch welded steel pipe, Los Angeles; bids opened.

800 tons, 48-inch steel pipe, department of water supply, gas and electricity, New York, bids Nov. 6.

600 tons, approximately, ferry boat for department of plants and structures, New York; bids about the middle of November; this ferry will take 350 tons of additional miscellaneous steel; department will later enter market for two larger ferry boats requiring approximately 2000 tons of miscellaneous steel each.

390 tons, 24-inch welded pipe, East Bay Municipal Utility District, Oakland, Calif.; bids Nov. 3.

Railroads

Santa Fe's 1560-Car Inquiry May Reach 2500—Pennsylvania Cars Mean Much Steel

TRACK MATERIAL PRICES, PAGE 99

New York—Award of 1500 gondolas by Pennsylvania to its own shops leads eastern market activity. This, with other scattered buying, brought the October total of domestic freight car awards to 4075, the best month since March, when 6118 cars were placed. The 10-month total is 39,632 cars, against 90,034 in the comparable period 1929, and 33,147 the first 10 months of 1928 and 47,209, the same period, 1927. Further comparisons follow:

	1930	1929	1928	1927
Jan.	5,072	13,196	4,160	14,710
Feb.	17,027	15,944	10,220	5,960
March	6,118	12,023	2,958	4,955
April	1,997	8,205	6,043	3,675
May	1,392	7,562	2,531	5,425
June	998	5,886	2,422	7,440
July	1348	341	582	2,295
Aug.	1,070	2,854	677	1,181
Sept.	535	4,517	1,378	682
Oct.	4,075	19,506	2,853	886
Total 10 mos.	39,632	90,034	33,147	47,209
Nov.	.....	6,361	6,140	1,189
Dec.	.....	9,710	4,799	14,897
Total	.....	106,105	44,763	63,295

Interborough Rapid Transit Co. opens bids Nov. 18 on 289 subway cars. Early action is expected in the award of 11,000 tons of rails for the board of transportation to the Bethlehem Steel Co., noted last week as the only bidder. The board is expected to open bids shortly on its third-rail requirements. Lehigh Foundries Inc., 342 Madison avenue, was low on approximately 200 tons of malleable rail braces, malleable tie plates and special malleable castings and on 100 tons of cast iron rail separators for the board of transportation.

Philadelphia—Entire steel trade is interested in Pennsylvania's negotiations for more than 40,000 tons of plates, shapes, bars, sheets, wheels and axles for 1500 gondolas, each 65½ feet long. Of that tonnage about 30,000 tons represents rolled material and on this business most mills quote 1.60c, nearest point on Pennsylvania lines.

Pittsburgh — Awarding of 1500 steel gondolas by Pennsylvania railroad gives impetus to freight car work. These cars will be 65½ feet long and involve larger steel tonnage than the usual type gondola, approximately 45,000 tons. Inquiry for rails and fastenings from eastern roads is quiet, although New York, New Haven & Hartford railroad wants 4000 kegs of spikes. Specifications for track material continue light.

Cleveland — Chesapeake & Ohio has placed 10,000 tons of tie plates with Wheeling Steel Corp., Inland Steel Co., and Illinois Steel Co. The same road has divided a 5000-keg spike order among Wheeling Steel Corp. and Tredegar Co., Richmond, Va.

Chicago—Santa Fe has issued an inquiry for 1560 cars. This inquiry may reach 2500 ultimately. Illinois Central is not planning immediate revival of its 2300-car inquiry. All western freight car shops are down except General American Tank Car Corp., operating on a light schedule. Pullman will soon resume partially at Michigan City, Ind., to build 500 box cars for Chicago Great Western, let recently. None of the Baltimore & Ohio cars will come to this district.

Track fastenings releases are steadily growing. Sales during the week totaled about 20,000 tons, leaving about 15,000 tons on inquiry. No fresh rail inquiry is out. Rail mills operate about 30 per cent.

Chicago, South Bend & South Shore railroad is purchasing several hundred tons of rails for its freight terminal at South Bend, Ind., the project to cost $350,000.

Birmingham, Ala.—No announcements are made as to resumption of operations among rail and accessory mills and car shops. Orders for early delivery are lacking. These mills are ready to start up as soon as business warrants.

Car Orders Placed

Baltimore & Ohio, 1000 box car bodies, to Standard Steel Car Co., Butler, Pa.; this is a portion of the 2000 previously reported as going entirely to company shops.

Hercules Cement Corp., 10 cement cars, to Standard Steel Car Co., Butler, Pa.

Illinois Terminal Railroad system, 15 freight car underframes, to American Car & Foundry Co., Madison, Ill.

Minneapolis, St. Paul & Sault Ste. Marie, 200 box cars, nearing completion in own shops.

Pennsylvania railroad, 1500 74-ton gondolas, 500 each to own shops at Harrisburg, Altoona and Pitcairn, Pa.

Wheeling Steel Corp., repairs to 20 gondola cars, to Pressed Steel Car Co., Pittsburgh.

Locomotive Orders Placed

Norfolk & Western, 10 heavy mallet-type locomotives, to cost $1,100,000, to own shops at Roanoke, Va.

Car Orders Pending

Atchison, Topeka & Santa Fe, 1532 freight and 28 passenger cars, including 1000 box cars, 500 refrigerator cars, 10 horse-express cars, 22 caboose cars, 10 drover cars, 16 gasoline electric passenger motor cars, and two cafe-lounge cars; freight car inquiry may reach 2500.

Ferrocarril al Pacifico, San Jose, Costa Rico, 25 cattle cars, bids asked.

Interboro Rapid Transit Co., 289 subway cars, bids to be opened Nov. 18; previously noted as contemplated.

New York Central, 20 multiple unit car bodies and trucks.

Rail Orders Pending

Chicago, South Bend & South Shore, several hundred tons for freight terminal, South Bend, Ind.

Missouri Pacific, eight miles of service track for new grain elevator, Kansas City, Mo.

New York board of transportation, 11,000 tons; Bethlehem Steel Co. only bidder; early award expected.

Metal Trades Group Picks Cincinnati for Meeting

Cincinnati will be host in April to the annual convention of the National Metal Trades association. This will be the thirty-third annual convention of the association and the first to be held in Cincinnati.

Structural Shapes

Bridges Account for About Half of 38,799-Ton Total—6628-Ton Job at Pittsburgh and 5000-Ton One at Cincinnati Let—8000-Ton Bridge in Canada Now Up

STRUCTURAL SHAPE PRICES, PAGE 99

Chicago—One structural mill in the district is down, placing operations under 50 per cent. Mills operate on hand-to-mouth orders, most of the shipments being small-section material. Awards total 4000 tons, including 2300 tons for the electrical group of the Chicago world's fair, and the Illinois Central suburban station and viaduct in Chicago. Inquiries, including several Michigan projects, total 4000 tons. Public Service Co. of Northern Illinois in advancing its 1931 $1,000,000 construction program will start some work this year. Plain material is unchanged at a base of 1.70c, mills.

Boston — No round tonnage awards took place in the structural market the past week. Small projects, however, totaled several hundred tons. Pending inquiries are few, including a 246-ton school and a 180-ton stable.

New York—Lettings in this area are lower as are inquiries. Tonnage placed is not expected to hold to the pace of recent weeks. Two more subway sections, 10,000 tons, are due early in December. Additional work is also expected on the Queensboro bridge, but tonnage from various stimulated city and government projects are not likely to be active much before the first of the year.

Philadelphia—Plain shape market is somewhat stiffer. Eastern mills continue to quote 1.70c, base, nearest mill, on new business in plain standard shapes and most current sales are at this figure. Some fabricators have been informed that third quarter prices will expire when old projects on which they were quoted are concluded. Eastern shape mills operate 60 to 65 per cent.

Pittsburgh—Bridge work still predominates in structural steel market. A Pittsburgh bridge involving 6628 tons has been placed while 5475 tons for an Ohio river bridge at Evansville, Ind., still is pending. Approaches for the latter, 2413 tons, have not been placed either. Other local awards include 875 tons for the Federal Reserve bank. Low prices are heard on large lots of shapes with the general market continuing 1.60c, Pittsburgh.

Cleveland—While shape awards continue at low ebb, fabricators are looking ahead to heavy tonnages by spring for city, county and state bridges and other engineering projects. The state's portion of the expense for bridges over Cuyahoga and Rocky rivers is $1.500,000. The government will bear a similar amount as will the Cuyahoga county. Big Four railroad is to construct a bridge at West 130th street, here. A railroad grade elimination at Lackawanna, N. Y., which closes Nov. 11, will require 2000 tons or more. McClintic-Marshall Co. was awarded Western Hills viaduct at Cincinnati, 5000 tons. Plain material in small lots is 1.60c, Pittsburgh.

Birmingham, Ala.—Small lot structural contracts continue, with an occasional specification above the 100-ton mark. Bookings sustain the 5-day week program among fabricators. Prospects are reported bright with considerable steel due for erection in this vicinity.

Contracts Placed

6628 tons, west end North Side bridge, Pittsburgh, to American Bridge Co., Pittsburgh.

5000 tons, Western Hills Viaduct, Cincinnati, to McClintic-Marshall Co., Pittsburgh; McDougall Construction Co., Atlanta, Ga.

3500 tons, Goose creek bridge in northern Ontario, Toronto & Northern Ontario railway, to Hamilton Bridge Co. Ltd., Hamilton, Ont.

2590 tons, Market street highway bridge, Pittsburgh, to McClintic-Marshall Co., Pittsburgh.

1600 tons, United States assay office, South street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa., instead of Bethlehem Steel Co. as noted in STEEL of Oct. 30.

1500 tons, viaduct at Calgary, Alta., to Hamilton Bridge Co. Ltd., Hamilton, Ont.

1400 tons, plant, General Electric Co., Pittsfield, Mass., to American Bridge Co., Pittsburgh.

1400 tons, furnaces and building, Electro Metallurgical Co., Philadelphia, to Lackawanna Steel Construction Co., Buffalo.

1300 tons, Medical Towers building, Philadelphia, to American Bridge Co., Pittsburgh.

1000 tons, Oak street viaduct, Kansas City, Mo., to McClintic-Marshall Co., Pittsburgh.

875 tons, Federal Reserve bank, Pittsburgh, to McClintic-Marshall Co., Pittsburgh; Mellon-Stuart Co., Pittsburgh, general contractor.

750 tons, Randolph street viaduct and Illinois Central railroad suburban station, Chicago, to American Bridge Co., Chicago.

700 tons, Radio Keith Orpheum theater, Albany, N. Y., to Pittsburgh Bridge & Iron Works, Pittsburgh.

655 tons, apartment, Seventy-second street and First avenue, New York, to Lehigh Structural Steel Co., Allentown, Pa.

550 tons, power house for Rock Island, Wash., power project, to unidentified eastern fabricator; Stone & Webster Inc., Boston, engineer.

500 tons, electrification work, Pennsylvania railroad, Newark, N. J., to Fort Pitt Bridge Works Co., Pittsburgh.

500 tons, electrification work, Pennsylvania railroad, Newark, N. J., to Fort Pitt Bridge Works Co., Pittsburgh.

500 tons, bridge at Cricket, Ark., for Missouri Pacific railroad, to Virginia Bridge & Iron Co., Roanoke, Va.

475 tons, state normal school, Plattsburg, N. Y., to Williams Bridge Co., Syracuse, N. Y.

465 tons, arch center span, Henry street bridge, Knoxville, Pa., to McClintic-Marshall Co., Pittsburgh.

440 tons, apartment, 102 West Eighty-fifth street, New York, to Paterson Bridge Works, Paterson, N. J.

405 tons, Mascher street bridge, Reading railroad, Philadelphia, to Phoenix Bridge Co., Phoenixville, Pa.

400 tons, laundry building, Pullman Co., Chicago, to McClintic-Marshall Co., Pittsburgh.

350 tons, office building, Blanchard Realty Co., Flushing, N. Y., to Kues Bros. Iron Works, Bronx, N. Y.; I Langner & Son, New York, general contractor.

345 tons, highway bridge, Delaware County, Pa., to McClintic-Marshall Co., Pittsburgh.

330 tons, tunnel support No. 2, New York, to McClintic-Marshall Co., Pittsburgh.

325 tons, sewage disposal plant addition, Milwaukee, to Milwaukee Bridge Co., Milwaukee.

325 tons, two bridges, Alabama, Tennessee & Northern railroad, to Virginia Bridge & Iron Co., Birmingham, Ala.

320 tons, Smyser elementary school, Chicago, to Midland Structural Steel Co., Chicago.

300 tons, addition to Bloomingdale hospital, White Plains, N. Y., to Levine Iron Works, Yonkers, N. Y.

290 tons, beam spans, Erie railroad, Trowbridge, Pa., to American Bridge Co., Pittsburgh.

275 tons, building, Autocar Sales Co., Philadelphia, to Kalman Steel Co., Chicago.

275 tons, bridge repairs, Erie railroad, Trowbridge, Pa., to American Bridge Co., Pittsburgh.

266 tons, plant addition, Inland Empire Paper Co., Spokane, to Bliss mill, Austin Co., Cleveland; Austin Co., Seattle, builder.

230 tons, steam power plant at Minto, N. B., to St. John Dry Dock & Ship-

Awards Compared

	Tons
Awards this week	**38,799**
Awards last week	**28,873**
Awards two weeks ago	**47,371**
Awards this week in 1929	**40,552**
Av. weekly awards, 1930	**35,992**
Av. weekly awards, 1929	**42,213**
Av. weekly awards, Oct	**37,575**
Tot. awards to date, 1929	**1,884,999**
Tot. awards to date, 1930	**1,619,180**

building Co., St. John, N. B.
230 tons, poles for electrification program, Philadelphia district, to Belmont Iron Works, Philadelphia.
215 tons, two plate girder spans, Erie, Pa., New York Central railroad, to McClintic-Marshall, Co., Pittsburgh.
200 tons, plant, Rheen Mfg. Co., South Gate, Calif., to McClintic-Marshall Co., Los Angeles.
200 tons, addition, school 84, Baltimore, to Acme Steel Engineering Co., Baltimore; reinforcing bars to Concrete Steel Co.; P. C. Streett Engineering Co., Baltimore, general contractor.
200 tons, bridge at Ferguson, Mo., Wabash railroad, St. Louis, to McClintic-Marshall Co., Pittsburgh.
200 tons, state highway bridge, Lawrence county, Pa., to Pittsburgh-Des Moines Steel Co., Pittsburgh.
200 tons, residence, Cold Springs, N. Y., to American Bridge Co., Pittsburgh.
200 tons, high school addition, Mt. Lebanon, Pa., to McClintic-Marshall Co., Pittsburgh; Pittsburgh Engineering & Construction Co., general contractor.
175 tons, post quarters buildings, Mitchel Field, N. Y., to Maxwell Spiro & Co., Jersey City, N. J.; Supreme Construction Co., New York, general contractor.
160 tons, jail, Ventura, Calif., to McClintic-Marshall Co., Los Angeles.
160 tons, Radio Keith Orpheum theater, Schenectady, N. Y., to Pittsburgh Bridge & Iron Works, Pittsburgh.
150 tons, school, Holyoke, Mass., to Harmann Steel Co., Holyoke.
150 tons, sugar cane boxes, Southern Sugar Co., Birmingham, Ala., to Birmingham Boiler & Engineering Co. Inc., Birmingham.
125 tons, state highway bridge, Orange County, N. Y., to American Bridge Co., Pittsburgh; Riteway Construction Co., New York, general contractor.
125 tons St. Mary's hospital, Rochester, Minn., to Minneapolis-Moline Power Implement Co., Minneapolis.
120 tons, United States arsenal, Picatinny, N. J., to Ingalls Iron Works Co., Birmingham, Ala.
120 tons, building, Campbell Soup Co., Camden, N. J., to McClintic-Marshall Co., Pittsburgh.
105 tons, highway viaduct, Bloomfield, N. J., to American Bridge Co., Pittsburgh.
100 tons, community house, Huguenot Memorial church, Pelham Manor, N. Y., to Kues Bros. Iron Works, Bronx, N. Y.; Wm. L. Crowe Construction Co., general contractor.
100 tons, restaurant and factory, Varick street, New York, to Grand Iron Works, New York.
100 tons, additional, building for du Pont interests, Wilmington, Del., to Belmont Iron Works, Philadelphia.
100 tons, work including garage for Dearborn, Mich., to R. C. Mahon, Detroit.

Contracts Pending

8000 tons, bridge over St. Lawrence river, between Cornwall, Ont., and St. Regis, Que.; Ontario Engineering Co. Ltd., Riverview boulevard, Fort Erie, Ont., engineer.
4000 tons, plain material for Pacific Fruit Express Co., San Francisco; bids being taken.
3200 tons, Burrard street bridge, Vancouver, B. C.; bids received.
2413 tons, approaches for Ohio river bridge, between Henderson, Ky., and Evansville, Ind.; Globe Construction Co., Evansville, low bidder.
2000 tons, passenger station, New York Central railroad, Toledo, O.
1500 tons, Balaban & Katz theater, Sixty-third street, Chicago.
1500 tons, theater, Oakland, Calif.; bids received.
1000 tons, plant, Wrought Washer Mfg. Co., Milwaukee; bids being taken; Klug & Smith Co., Milwaukee, consulting engineer and general contractor.
1000 tons, office building for Joseph Bruening & Associates, Kansas City, Mo.
1000 tons, seawall and breakwater at Selfridge field, Detroit.
1000 tons, theater, Seventh avenue and Fiftieth street, New York.
1000 tons, theater, Seventh avenue and Fiftieth street, New York.
900 tons, Roosevelt high school, Washington.
800 tons, John Marshall high school, Cleveland; Crowell & Little Construction Co., Cleveland, low on general contract at $638,500 with $590,000 and $548,000 as two alternate bids.
750 tons, warehouse and service station, Firestone Tire & Rubber Co., Detroit.
600 tons, Scottish Rite building, Collingswood, N. J.
500 tons, exchange building, Michigan Bell Telephone Co., Detroit.
500 tons, power house for Humble Oil & Refining Co., Baytown, Tex.
450 tons, state highway work in Michigan.
400 tons, light plant for Pasadena, Calif.; bids Nov. 14.
400 tons, substructure, South Tenth street bridge, Pittsburgh; general contract to Vang Construction Co., Pittsburgh.
246 tons, school, Jamaica Plain, Mass.
230 tons, building, Electric Realty Co., Philadelphia.
180 tons, Macomber stable, Framingham, Mass.
Unstated tonnage, building, Young Men's and Women's Hebrew association, to cost $900,000, Rochester, N. Y.; Simon N. Stein, Rochester, chairman of building committee.
Unstated tonnage, bridge over Grand river at Paris, Ont., with six arch and two approach spans; general contract awarded Standard Steel Construction Co., Port Robinson, Ont.
Unstated tonnage, produce terminal, Pennsylvania railroad, Baltimore.
Unstated tonnage, tunnels at Baltimore, Pennsylvania railroad; to come up next year.

Concrete Bars

4000-Ton Cincinnati Viaduct Tops Awards — 1000-Ton Subway at Philadelphia Also Let—Inquiry, Buying Rates Well Sustained—2000-Ton Vancouver Bridge Pending

REINFORCING BAR PRICES, PAGE 99

Chicago—About 1200 tons of reinforcing projects are hanging fire. Public Service Co. of Northern Illinois is to start construction this year on some of its projected substations and power plant work for 1931. Illinois Bell Telephone Co. has a plant construction program of about $500,000. Billet reinforcing bars are variable in price, ranging from 1.80c to 2.00c.

Boston—Six or seven small concrete bar jobs let last week totaled only about 200 tons. Inquiries are out which brighten prospects considerably, however. Only two or three will be placed soon. Prices continue weak, especially on round tonnages.

Buffalo—Major inquiries for concrete bars are absent. Recent inquiry is being covered slowly and the market generally is inactive. Prices are nominal.

Pittsburgh — Concrete bar tonnage is slow to decline and compares rather favorably with 1929 activity. Pending bridge work for Allegheny county will require 500 tons and the Federal Reserve bank here will take 175 tons. Awards to Pittsburgh mills include 1000 tons for subway work at Philadelphia.

Cincinnati—Western Hills viaduct taking 4000 tons of concrete bars, was awarded Pollak Steel Co., here.

Cleveland — Approximately 480 tons of concrete bars has been purchased from Republic Steel Corp., Bourne-Fuller division, Cleveland, by W. J. Schirmer Co., Cleveland, general contractor, for the lakefront stadium. About 80 tons of mesh for this job went to American Steel & Wire Co. Crowell & Little Construction Co., Cleveland, is low on the general contract for John Marshall junior-senior high school, taking about 200 tons of concrete

(Concluded on Page 107)

Awards Compared

	Tons
Awards this week	8,211
Awards last week	11,278
Awards two weeks ago	8,140
Awards this week in 1929	6,771
Av. weekly awards, 1929	5,849
Av. weekly awards, 1930	7,132
Average weekly awards Oct.	8,612
Total awards to date, 1929	277,224
Tot. awards to date, 1930	320,935

Strip

Smaller Demand Than in October—Some Shading of Prices Is Seen—Sales in Small Lots

STRIP PRICES, PAGE 99

New York—Wide and narrow gage hot strip are moving at 1.60c and 1.70c, Pittsburgh, respectively, although some small business continues at $1 a ton higher. Cold rolled strip is 2.35c, Pittsburgh. Buying remains slack.

Philadelphia—Hot-rolled strip is in fair demand at 1.60c, Pittsburgh, on widths over six inches to 24 inches and 1.70c on widths up to six inches, but occasional concessions are being made. Hot strip over 24 inches usually is 1.80c, Pittsburgh, with 1.95c on light gages, with blue annealed extras, but subject to occasional concessions.

Pittsburgh — Strip tonnage has moderated following fair activity during October. Orders involve small lots and automotive tonnage is lighter for several interests. Prices are fairly well held at 1.60c to 1.65c for wide hot strip and 1.70c to 1.75c for narrower material. Cold strip continues 2.35c to 2.45c. Mill operations average around 40 per cent for hot mills and 30 per cent for cold strip. Some mills are operating at higher levels on alternate weeks.

Youngstown, O.—Broadening of the market for both hot and cold-rolled strip continues to bring new customers other than auto parts-makers. The latter still show no signs of expanding rates of operations. Apparently, consumers have no stocks since they demand and get shipments within two or three days, even for lots of several hundred pounds each. In some cases shipments have to be made by express to keep consumers' works in operation. Quotations have not changed.

Cleveland—While some makers of strip steel reported a slight gain in hot strip tonnage late in October, others witnessed no pickup. Cold strip remains about the same as throughout the last month, small orders predominating. Automotive consumption shows little betterment and buying rates by other consuming lines are so low that it takes many orders to make a worth-while rolling. Hot-rolled usually is quoted 1.60c and 1.70c, Pittsburgh, for wide and narrow, respectively. Cold-rolled is 2.35c, Cleveland. Mill operations are low.

Warehouse Bookings Are Without Change

Warehouse Prices, Page 121

New York—Jobbers report little change in October, though they find encouragement in slightly firmer prices within the past fortnight. Little change is expected.

Boston—While there is quietness in structural lines of a major character, little hesitancy appears to be showing in the matter of advancing many small jobs.

Philadelphia — Although several jobbers report an improvement in bookings in November, others booked somewhat less and generally October sales were about the same as September's, with prices unchanged.

Pittsburgh—Sales are declining slowly and October business was off slightly from September. Sheets are fairly active. Prices are unchanged.

Buffalo—Warehouses report a better volume of business during the past week. Decline in orders to seasonal conditions this quarter has been far less sharp than that of 1929.

Cincinnati — Numerically, warehouse orders are holding the level of early fall business, but a slight tendency to lighter tonnage is noted. Scheduled prices are being maintained.

Chicago—October warehouse sales made a barely perceptible gain over September. Due to inventory retrenchment it is expected that November sales will dwindle further. Individual orders are of extremely light volume. All hot rolled products are moving to widely distributed lines of consumption. Prices are unchanged.

St. Louis—Aside from commodities affected by seasonal considerations, and material for engineering and construction work, demand from warehouse is quiet. October sales reflected extremely spotted conditions. The average, depending on general outlets, found business poor. Railroads purchase on an absolute necessity basis. Warehouses purchase sheets and plates only as needed. Stocks are in fair shape, assortments generally complete. No change in prices is noted.

Cleveland—Quiet situation in the local iron and steel warehouse market continues. Jobbers generally report October sales volume even with the September rate. One leading interest had a considerably better month in October than September. Prices continue unchanged and fairly firm.

Operations by Districts Are Off Several Points

Youngstown, O.,—Declines in sheet plant schedules reduced the district's operating average this week to 52 per cent, a loss of two points from last week's 54 per cent.

Republic Steel Corp. activity in the district dropped 2 points to 63 per cent, and Empire Steel Corp.'s Falcon plant was placed on the idle list after one week's operations. All three Empire plants here are inactive.

Youngstown Sheet & Tube is operating at 50 per cent, as are Carnegie Steel Co., Sharon Steel Hoop Co. and Newton Steel Co. Truscon Steel Co. operates at 70 per cent.

Open-hearth production is exactly the same as a year ago, with 27 operating for independents.

Philadelphia—Ingot production at 51-53 per cent capacity for Eastern steelworks is off a shade from last week's 53 per cent. Plate mills operate at 50 per cent capacity; shapes at 60 to 65.

Pittsburgh—Ingot output is off several points at no higher than 50 per cent. Sheet production is lower at 40 to 45 with tin plate off at 45 to 50. Strip production is lighter at 40 with pipe unchanged at 50.

Buffalo—Withdrawal of an open-hearth furnace reduces operations to 54 per cent capacity, compared with the recent 57 per cent maintained since early October. Further reduction is said to be contemplated for the middle of this month.

Cleveland—Ingot output is at 21 per cent capacity this week, a further recession of three points with the closing of another open hearth. Corrigan, McKinney has further curtailed operations and Otis Steel's steelmaking is at a standstill for the second consecutive week. Only three of 27 independent open hearths are on, and seven of the district's 34.

Chicago — Steel production has dropped to barely 50 per cent, against 57-58 per cent last week, as a result of further curtailment of open-hearth output. Finishing mills show little change. Lower sheet mill operations are countered by increases in departments rolling track fastenings. One structural mill is down for at least a week.

Birmingham, Ala.—Operations are unchanged at 45 per cent capacity. Nine open-hearth furnaces are producing steel. Sheet and plate mills are showing greatest activity.

Concrete Awards

(*Concluded from Page* 103)

bars. A concrete mausoleum for Crown Hill burial park, Twinsburg, O., will be built in the spring at a cost of $1,250,000, according to C. W. Beck, developer of the property. Concrete bars are 1.60c to 1.65c, Cleveland.

Birmingham, Ala.—Steady shipments of concrete bars are assured for some time. Specifications are in sight to keep producers busy until after Jan. 1. Bond issues are expected to be voted to provide considerable business.

Contracts Placed

4000 tons, Western Hills viaduct, Cincinnati, to Pollak Steel Co., Cincinnati.
1000 tons, subway, Philadelphia, to unstated interest; Dravo Contracting Co., Pittsburgh, general contractor.
900 tons, building, Campbell Soup Co., Camden, N. J., to Kalman Steel Co., Chicago.
560 tons, lakefront stadium, Cleveland, 480 tons of concrete bars to Republic Steel Corp., Bourne-Fuller division, Cleveland, and 80 tons of mesh to American Steel & Wire Co., Cleveland; W. J. Schirmer Co., Cleveland, general contractor.
500 tons, track material, Northern Pacific railroad, to Pacific Coast Forge Co., Seattle.
300 tons, $750,000 intermediate reformatory, Algoa, Jefferson City, Mo., to Laclede Steel Co., St. Louis.
231 tons, plant addition, Inland Empire Mill Co., Spokane, to Northwest Steel Rolling Mills and Pacific Coast Steel Corp., Seattle; Austin Co., Seattle, builder.
200 tons, addition, Institute for Crippled and Disabled, First avenue and East Twenty-third street, New York, to Faitoute Iron & Steel Co., New York; Industrial Engineering Co., concrete contractor.
115 tons, building, Bank of Italy, San Francisco, to Pacific Coast Steel Corp., San Francisco.
105 tons, state school, New Paltz, N. Y., to Truscon Steel Co., Youngstown, O.
100 tons, addition, Bloomingdale hospital, White Plains, N. Y., to Concrete Steel Co., New York.
100 tons, normal school, Plattsburg, N. Y., to Havemyer Bar Co., Syracuse, N. Y.
100 tons, jail building, Ventura, Calif., to unstated interest.

Contracts Pending

2000 tons, Burrard street bridge, Vancouver, B. C.; bids received.
402 tons, paving for United States bureau of reclamation, Burley, Idaho; bids received.
250 tons, South Tenth street bridge substructure, Pittsburgh; general contract to Vang Construction Co., Pittsburgh.
200 to 300 tons, filtration or sewage plant, Lima, O.; bids being taken.
200 tons, John Marshall senior-junior high school, Cleveland; Crowell & Little Construction Co., Cleveland, low on general contract.
200 tons, Randolph street viaduct and Illinois Central suburban station, Chicago.
200 tons, sub-station at Wheaton, Ill., for Public Service Co. of Northern Illinois.
175 tons, Federal Reserve Bank building, Pittsburgh; general contract to Mellon Stuart Co., Pittsburgh.
120 tons, Flahertv Run road, general contract to Mike Mannella, Pittsburgh.
100 tons, Killbuck Run bridge, Allegheny county; general contract to Welch Construction Co., Pittsburgh.
Unstated tonnage, plant construction for Illinois Bell Telephone Co., Chicago.
100 tons or more, $100,000 office building, Idaho Power Co., Boise, Idaho, general contract to J. O. Gordon & Son, Boise.
Unstated tonnage, 4600-foot tunnel through Vancouver, B. C., connecting Burrard Inlet with False Creek yards, Canadian Pacific railway; bids Dec. 1.
Unstated tonnage, $1,250,000 mausoleum for Crown Hill burial park, Twinsburg, O.; bids to be taken in spring by C. W. Beck, Cleveland, developer.

Pipe

Usual Letting 100 to 750 Tons —Inquiry Rate Fair—8600-Ton Steel Line Finally Let

PIPE PRICES, PAGE 121

Pittsburgh—New business in practically all tubular products is quiet with prospects regarded dull as regards improvement before 1931. Line pipe is somewhat out of season despite continued talk of a number of projects for future consideration. Standard pipe shows little improvement over the past 30 days. Activity in oil country goods still is restricted. Mechanical tubing activity is affected by poor automotive requirements and demand for locomotive and boiler tubes is only fair. Pipe mill operations continue 50 per cent.

Boston—Private business continues in good volume. Difficulties between Marblehead and Swampscott, Mass., regarding town lines have been settled and Warren Foundry & Pipe Co. will now proceed with the 750-ton pipe order. Attleboro, Mass., is in the market for 30,000 feet of 16-inch pipe. Prices hold firm.

Chicago—Minor contractors' orders constitute the chief buying of cast pressure pipe. About 700 tons of contract work is on inquiry, and 300 tons have been placed. Several projects for next year hinge on the outcome of bond issue elections this week. A question of policy has been submitted to Chicago voters on a proposed $60,000,000 filtration plant. Columbus, O., awarded 500 tons and Lima, O., 300 tons. Chicago delivered prices on the smaller diameters are $45.20 to $46.20.

Birmingham, Ala.—Cast pipe shipments remain steady, particularly western, although few lettings are reported. Output is being reduced. Prices are unchanged $37 to $38 for 6-inch and larger.

Contracts Placed

750 tons, mostly 16-inch cast pipe for town lines, Marblehead and Swampscott, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.
500 tons, 8-inch cast pipe for Columbus, O., to United States Pipe & Foundry Co., East Burlington, N. J.
500 tons, 6, 8, 10 and 12-inch monocast pipe for White River Lumber Co., Enumclaw, Wash., to American Cast Iron Pipe Co., Seattle.
300 tons, 6 and 8-inch cast pipe for Lima, O., to James B. Clow & Sons, Chicago.
100 tons, 8-inch class B cast pipe for Magnolia boulevard improvement, Seattle, to French producers.
189 tons, 2 to 8-inch class C cast pipe improvement, Fifty-fourth street, San Diego, Calif., to unnamed interest.

Steel Pipe Awards

8600 tons, two water pipe line projects, Seattle, formal award to Western Pipe & Steel Co., San Francisco; Queen City Construction Co., Seattle, contractor. This was noted last week in STEEL as informally awarded this fabricator.
Unstated tonnage, 75,000 feet, 24-inch electric arc welded steel pipe for a northwestern municipal water system, to Beall Pipe & Tank Corp., Portland, Oreg.

Contracts Pending

260 tons, 8 and 14-inch cast pipe for Hoquiam, Wash.; bids Nov. 10.
135 tons, 10-inch class B cast pipe for Renton, Wash.; bids Nov. 4.
Unstated tonnage, 6100 lineal feet 3 inch, 1170 feet 2½ inch and 1170 feet 2 inch water pipe, West Slope water district, Portland, Oreg., W. W. Weed, superintendent; bids closed Nov. 1.
Unstated tonnage, 30,000 feet 16-inch cast pipe for Attleboro, Mass.

Steel Pipe Pending

Unstated tonnage, $15,000,000 natural gas line, 250 miles long for Butte, Mont., district; voters to pass on proposed franchise this week.

Iron Ore Imports Grow; Prices Down; Sales Heavy

Iron Ore Prices, Page 110

New York.—Russian iron ore is starting to move into this country on a large scale and the movement will be continuous for an indefinite period. Three cargoes have been re-

Craftsmanship

Machinery may largely bear the burden of labor but only the practised skill of human sight and touch can achieve the last full measure of quality

UNION DRAWN STEEL CO.

ceived at Baltimore and one or two at Boston. Several more cargoes now are enroute to this country. The ore is for use in making basic pig iron and averages 65 per cent iron. It is coming from the port of Nikolaev on the Black Sea.

Eastern furnaces are buying large tonnages of foreign ore, taking advantage of low prices. In some instances contracts have been closed for the next three years. The total so far is estimated at 500,000 to 1,000,000 tons. Negotiations for additional tonnages are in progress.

Prices on several grades of foreign ore have been reduced. North African low phosphorus and Swedish basic, 65 per cent, are off ½c, now holding at 10c and 9c, per unit, alongside Atlantic docks, respectively. Spanish and North African basic, 50 to 60 per cent, also are off ½c, to 9c. Swedish low phosphorus is off 1c, to 10c. Foreign manganiferous iron ore, 45 to 55 per cent iron and 6 to 10 per cent manganese, is unchanged at 11c, and Newfoundland foundry ore, 55 per cent, is held at 9c, although the latter price is largely nominal.

The manganese ore market is untested. Hence, the range of 27c to 28c per unit, not including duty, on 52 to 55 per cent Caucasian, and 48 to 50 per cent Indiana, is nominal. The price of 25c on Brazilian, 46 to 48 per cent, also is nominal. Some 43 per cent foreign manganese ore has been offered in trial lots at 23.50c, per unit, not including duty.

Cleveland — The Lake Superior iron ore market is undisturbed by the heavier imports, larger sales and lower prices on foreign iron ore, mainly because the season's contracts have been closed, lake merchant ore does not go to the eastern coast furnaces, and imported ore cannot overcome freight differentials to cut in on the lake ore markets. Shipments of lake ore to Nov. 1 this season totaled 44,595,294 tons, 27.2 per cent less than in the same period last year, as shown by the following report from the Lake Superior Iron Ore association:

Port and Dock	To Nov. 1 1929	To Nov. 1 1930
ESCANABA:		
C. & N. W.	4,079,850	2,776,271
C. M. & St. P.	1,694,203	1,127,013
MARQUETTE:		
D. S. S. & A.	793,118	531,701
L. S. & I.	3,297,261	2,236,209
ASHLAND:		
C. & N. W.	5,025,528	3,535,190
Soo Line	2,172,451	1,341,168
SUPERIOR:		
Great Nor.	16,380,358	11,979,695
Soo Line	1,280,789	954,983
Nor. Pac.	815,337	628,683
DULUTH:		
TWO HARBORS:		
D. M. & N.	19,466,145	13,413,687
D. & I. R.	6,248,914	6,070,694
Total	61,253,954	44,595,294

Wire

Nail Weakness Brings Lower Prices on Other Jobbers' Lines —Small Demand Continues

WIRE PRICES, PAGE 99

New York—Nail demand shows some improvement, with prices unchanged at $1.90 to $2, Pittsburgh. It appears that most nail tonnage is going at $1.95, Pittsburgh. Plain bright wire also is moving better but at the unchanged price of 2.30c, Pittsburgh.

Worcester, Mass.—Wire production is showing more strength in a livelier demand, with increased tonnages. Prices are firm at 2.40c, base, Worcester, for plain bright wire to dealers.

Chicago—Tonnage offered in merchant wire products hardly offers a test of prices, although nails are irregular and prices as low as $2 per keg, Chicago or western mills, have been made. Nothing indicates gains in common wire products, including nails, as seasonal farm buying has subsided. It is feared that low crop prices will affect demand when ordinarily improvement should be expected. Specifications for manufacturers' wire are decidedly slow.

Pittsburgh — Demand for wire products is quiet and unchanged. October tonnage was fairly close to that of September despite a slowing down late in the month. The market on standard wire nails now is $1.95 per keg to jobbers, with prices of other jobbers' products adjusted to correspond with the decline of 5 cents in nails. Plain wire still is going to representative consumers at 2.30c despite some slight easiness in the market and occasional reports of lower prices.

Cleveland—All orders for wire products including nails, are small. Some larger orders for wire, wire rods, etc., occasionally are placed against contracts by nut, bolt, rivet and screw interests but their operating rate of 30 to 40 per cent is easily satisfied with material. Although some producers claim to be holding to 2.30c, Cleveland, on bright wire, some buyers say they have a 2.20c quotation. Nails are $1.90 to $2, Cleveland, with large producers adhering to $2.

Bolt, Nut, Rivet Demand Slower; Orders Are Small

Bolts, Nuts, Rivets, Prices Page 99

Pittsburgh—Demand for bolts, nuts and rivets still is tending downward slowly. October tonnage was off slightly from that of September. Orders are small, representing current needs. Production continues around 40 per cent. Prices are steady at 73 off for bolts and nuts and 2.75c, Pittsburgh, for large rivets.

Cleveland—Nut, bolt and rivet orders still are limited. Operations vary between 30 and 40 per cent. Demand in many consuming lines is tapering off instead of improving.

Chicago—Nut, bolt and rivet specifications were slightly under September, but October shipments gained a few points over the preceding month. Occasional automotive orders helped October specifications. Increases in implement output will not become general this month. Warehouse price weaknesses in Milwaukee and the Twin Cities have not affected the general market. Small rivets are unchanged at 70 to 70, 10 and 5 off.

Semifinished in Light Demand; Prices Unchanged

Semifinished Prices, Page 110

Pittsburgh — Semifinished steel continues quiet, with little change noted in tonnage compared with a month ago. Small orders for rerolling billets and sheet bars bring $31, with no large tonnages present to test the market. Wire rods are steady at $36, and forging billets continuing at this same level.

Youngstown, O.—With sheet and strip mills slowing down minimum quantities of billets and sheet bars are moving to consumers. Billets, slabs and sheet bars continue unchanged at $31, Youngstown and Pittsburgh.

Cleveland—The leading merchant producer here has dropped another open hearth from its active list, now operating three of its 14. Shipments show no change from the recent low rate. Sheet bars, billets and slabs are nominal at $31, Cleveland and Youngstown, O.

Chicago—Moderately heavy stocks of sheet bars have accumulated, but otherwise little storage of semifinished is reported. Prices for sheet bars and small billets are unchanged at $32, Chicago.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	18.76 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail, Newark	18.78 to 19.28
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.01 to 18.01
Alabama, del. St. Louis	16.42
Alabama, del. Cincinnati	15.19 to 16.19
Alabama, del. Cleveland	18.01
Ala., Phila., dock del.	16.75 to 17.25
Ala., Balt., dock del.	16.50 to 17.00
Alabama, New York dock	16.50
Ala., Boston dock del.	17.25
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	15.19 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	19.28 to 19.78
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	19.26 to 20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.76 to 20.76

MALLEABLE

Chicago, furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.50 to 18.00
Buffalo fur., local del.	17.00
Montreal, delivered	22.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6 00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis.	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	27 to 28 cents
Indian, 48-50% (nom.)	27 to 28 cents
Brazilian, 46-48% (nom.)	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43 00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Marvland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Pet net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.60c to 1.70c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

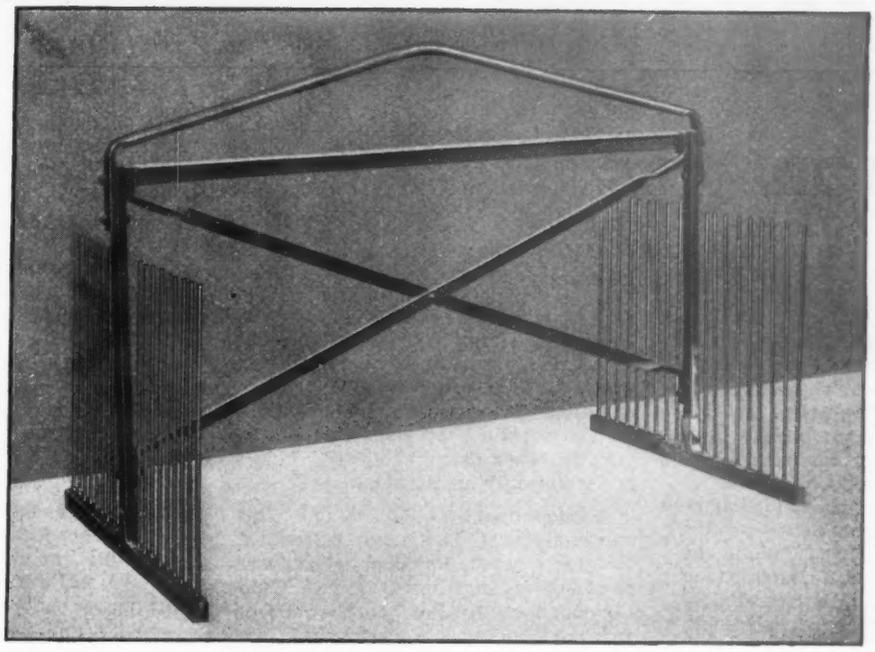
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$17.25
Washed gravel, import duty paid east, tide, gross ton	19.50

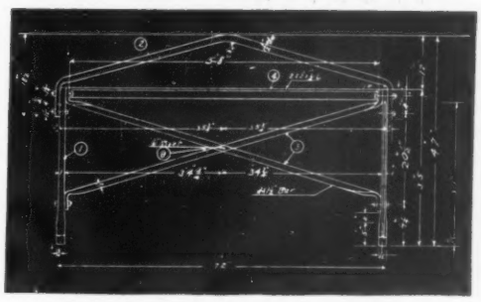


A forged and wrought Monel Metal pickling rack constructed at the Huntington, W. Va., works of The International Nickel Co., Inc., for the Witt Cornice Co. of Cincinnati, Ohio. Length of rack is 6 ft. between brackets. It weighs approximately 335 lbs. with adequate capacity for handling 2,000 lbs. of formed steel on each trip to the acid bath before hot galvanizing.

No. 44
Pickling Equipment that passes the test of service

This MONEL METAL *pickling rack was* specially designed and specially built *to handle* special *shapes*

HERE'S another pickling rack that shows how metal processing equipment of the most highly specialized design can be readily fabricated from standard Monel Metal shapes. It is also typical of the economical tendency to employ this modern material for equipment that must withstand severe service conditions.



Dimensional diagram showing sectional frame structure of pickling rack illustrated.

Monel Metal has a uniform rolled structure that does not weaken in service. It has the toughness and strength of steel and it is highly resistant to the attacks of most solutions used in present-day pickling practice. Repeated tests show that this modern Nickel alloy loses little weight during years of daily trips to the acid bath.

Long experience has convinced leading processors that Monel Metal is ideal for racks, crates, hooks, chains, tie-rods, fume ducts and many other types of pickling equipment. International Nickel engineers have made a thorough study of modern pickling problems. You will find their experience invaluable in planning your next installation. Don't hesitate to request it.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

MONEL METAL

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Pig Iron

Eastern Market Featured by Large Sales to Pipemakers— Expect No Change This Month

PIG IRON PRICES, PAGE 110

Pittsburgh—Sales of pig iron fail to follow the upward trend noted in shipments last month. New business is lighter than current shipments, reducing unfilled orders, although with most of the merchant stacks idle stocks are not being increased. The Shenango Furnace Co. resumed Monday with one of its two Sharpsville, Pa., stacks, iron being needed for making ingot molds. This is the only active merchant furnace stack of seven in the valley district. Prices are nominally unchanged, although it is doubted if present levels would hold on large inquiry.

Boston—Pig iron business is quiet. Mystic Iron Works, Everett, Mass., booked 2000 tons in small orders. Buffalo and other furnaces took a few carloads. Prices are unchanged.

New York—Pig iron sales for the week aggregate more than 5000 tons, a slight increase over the preceding week. Prices are unchanged although $15.50, base, Buffalo furnace, is less in evidence. The range on Buffalo iron is $15.50 to $16. Southern iron is $16.50, delivered New York docks. Included in scattered inquiries are 250 tons for the Cincinnati plant of the Worthington Pump & Machinery Corp., Harrison, N. J.

The Lavino Furnace Co. has blown in its Reusens, Va., furnace after an idleness of many months. A double shift of 125 men are reported now employed in production of ferromanganese.

Philadelphia — Sales of pig iron are limited to small and moderate size lots, including 500 tons for a York, Pa., consumer and 1500 tons for a Flemington, N. J., melter. Eastern Pennsylvania foundry iron continues $18 to $19, base, furnace. Several sales have been made recently by southern furnaces, mainly at $12, base, Birmingham. Two lots of English low phosphorus iron have been sold in this district at $22, duty paid, Philadelphia dock, and one distress tonnage sold at less. A Delaware river pipemaker recently purchased 5000 to 10,000 tons of New England foundry iron on which shipments now are being made.

Another pipemaker, in Jersey City, has purchased 10,000 tons of eastern Pennsylvania iron.

Buffalo—A merchant furnace is going out this week, leaving only five stacks in production, or about 30 per cent of the district capacity. It is said plans have been made to withdraw one more furnace from production about Nov. 15, leaving only four in operation, which would be the smallest number in the district in more than ten years. Prices are nominally unchanged.

Youngstown, O.—While one Ohio works stack of the Carnegie Steel Co. has been blown out and a Hubbard stack of Youngstown Sheet & Tube Co. has been banked, the Lowellville furnace and the Warren stack are nearing completion of their repairs and may blow in later. Pig iron is still moving in small lots in this district and the total does not grow appreciably. No. 2 foundry holds at $17, valley, and malleable and bessemer at $17.50.

Cleveland—Pig iron sellers do not expect much if any improvement in the market the remainder of this year. A few sales have been made for first quarter to cover known requirements, but orders generally are for prompt shipment. One merchant furnace interest states indications point to a larger tonnage for itself in November than in October. Sales by furnaces with headquarters at Cleveland totaled 12,000 tons in the past week, slightly more than in the week preceding. Westinghouse Electric & Mfg. Co. divided among several sellers about 1000 tons for its Cleveland plant. The local market is dull, foundries continuing at the lowest rate of the year. Inquiries are not large enough to develop the sharp competition that existed recently and the minimum for outside shipment from Cleveland furnaces is $16, base. Other lake furnaces are holding to $17 to $17.50, base, for shipment in competitive territory in western Ohio, northern Indiana and lower Michigan. Cleveland furnaces continue to quote $17.50, base, for local delivery.

Cincinnati—Total sales of pig iron in this district shrunk to less than 2000 tons during the past week. Attempts are being made to steady southern iron at $11.50, base, Birmingham, after keen competition on an inquiry for 500 tons revealed concessions.

Chicago—Further buying for first quarter has developed five or six orders of 2000 tons or more, closed in the past week. These included 2000 tons of foundry iron and 500 tons of high silicon iron by a Chicago melter. November shipping orders indicate a gain over October. The price continues $17.50, furnace, for the base grade. Occasional small orders at concessions under this price are reported on resale and dock iron, chiefly higher silicon grades. The Chicago delivered prices for southern iron are $17.01 to $18.01, or $11 to $12, Alabama furnace. A tendency to strengthen southern iron is noted in this market.

St. Louis—New business in pig iron has not improved but tonnage moving on contracts shows a moderate increase. Aggregate sales in the past week in this district fell below 2000 tons. There is less pressure to sell and some of the recent low prices have disappeared.

Birmingham, Ala.—The total of small sales is less than output by the ten blast furnaces producing foundry and basic iron in the state. Furnace stocks, however, are less than a year ago. Prices are steady.

Toronto, Ont. — Melters display little interest in the market, sales for the week dropping to 500 tons. Prices are unchanged.

Ferroalloys in Better Demand for Steel Alloys

Ferroalloy Prices, Page 110

New York—Domestic spiegeleisen, 19 to 21 per cent, continues at $33, subject to differentials for quantities. Ferromanganese is $99, duty paid, for carload to 500 tons annually. Demand is unchanged. Special ferroalloys are moving better than the heavier materials, as some of the alloy steels are being produced more nearly to capacity than plain carbon steels. Prices are unchanged. The tungsten market is quiet, with imported wolframite about $12.50, duty paid, a short ton unit.

Pittsburgh — Demand for ferromanganese and spiegeleisen is off moderately since a month ago. Consumers are maintaining minimum stocks. Ferromanganese continues $103.79, delivered, and spiegeleisen $33, furnace, both prices applying on small lots.

MacDonald Attacks Cartels

Ramsay MacDonald, British premier, in opening parliament Oct. 28 declared his opposition to cartels by which British producers allotted Canadian trade with other nations, citing a division of the dominion's tin plate and electrical equipment business with American interests.

Scrap

Bottom Drops Out of Market as Melters Cease Buying—Continued Reductions Bring Record

Chicago—Without heavy selling, due to glutted storage yards of melters, and to consumer resistance, iron and steel scrap prices are pointed steadily downward. Cast borings have dropped to a range of $3.75 to $4.25, the lowest in 30 years. Reductions of 25 and 50 cents have been frequent throughout the list, and railroad coil and leaf springs dropped $2.50 during the week. Heavy melting steel has dropped to a range of $10.50 to $11. A leading steelworks melter has a virtual embargo on further shipments, because of heavy accumulations and recent releases of railroad material on old orders. Bidding is extremely light for railroad material. Country scrap collections are being affected sharply by the continued low market.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	10.50 to 11.50
Boston, dealers	7.75 to 8.10
Buffalo, No. 1	12.00 to 12.50
Buffalo, No. 2	11.00 to 11.50
Chicago	10.50 to 11.00
Cinci., deal.	10.25 to 10.75
Cleve., No. 1	11.00 to 11.25
Cleve., No. 2	10.25 to 10.50
Det., No. 1 deal	10.00 to 10.50
Det., No. 2 deal	8.50 to 9.00
E. Pa. del. mill	11.50 to 12.50
N. Y. del. R. R.	8.50 to 9.00
N Y. deal. No. 2	6.25 to 6.50
N. Y., deal. yd.	6.00
Pitts. No. 1	13.50 to 14.00
St. L. No. 1 sel	11.00 to 11.50
Federal, Ill.	10.00 to 10.50
Granite C., Ill.	9.25 to 9.75
Valleys No. 1	14.00 to 14.50

COMPRESSED SHEETS

Buffalo, dealers	10.50 to 11.00
Chicago	9.00 to 9.50
Cleveland	10.50 to 10.75
Detroit, dealers	10.00 to 10.50
E. Pa. new mat	10.50 to 11.50
Pittsburgh	13.00 to 13.50
Valleys	13.50 to 14.00

BUNDLED SHEETS

Buffalo	8.00 to 8.50
Cinci., deal	9.25 to 9.75
Cleveland	8.00 to 8.50
Eastern Pa.	9.50
Pittsburgh	11.50 to 12.00
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	6.50 to 7.00
Cincinnati	6.50 to 7.00
Detroit, dealers	7.00 to 7.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	6.85 to 8.10
Buffalo	15.00 to 15.50
Chicago (3 ft.)	13.00 to 13.50
Chicago (2 ft.)	13.50 to 14.00
Cinci., deal.	15.75 to 16.25
Detroit, deal	14.00 to 14.50
Pitts. (open-hearth, 3 ft. and less)	16.00 to 16.50
St. Louis	13.50 to 14.00

STOVE PLATE

Birmingham	8.50 to 9.50
Boston, con.	8.00 to 8.50
Buffalo	9.50 to 10.00
Chicago, net	6.50 to 7.00
Cinci., deal. net	5.75 to 6.25
Det., net, deal.	6.50 to 7.00
Eastern Pa.	9.50
N. Y., deal. mill	5.25
St. Louis	8.50 to 9.00

COUPLERS, SPRINGS

Buffalo	14.50 to 15.00
Chicago	12.50 to 13.00
Eastern Pa.	16.00 to 17.00
Pittsburgh	16.00 to 16.50
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Chicago	12.50 to 13.00
St. Louis	10.00 to 10.50

LOW PHOSPHORUS

Buff., billets and bloom crops	15.50 to 16.00
Cleveland bil. and bloom crops	17.50
Eastern Pa.	17.50 to 18.00
Pittsburgh	8.25 to 8.75
bloom crops	18.00 to 19.00
Pitts. sheet bar crops	16.00 to 16.50

FROGS, SWITCHES

Chicago	11.50 to 12.00
St. Louis	11.50 to 12.00

SHOVELING STEEL

Chicago	11.00 to 11.50
Cleveland	7.50 to 8.00
St. Louis	10.00 to 10.50

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	12.00 to 12.50
Chicago, No. 1	10.00 to 10.50
Chicago, No. 2	11.00 to 11.50
Cinci., No. 2	10.25 to 10.75
Eastern Pa.	13.50 to 14.00
N. Y., No. 1 deal	10.00 to 10.50
Pitts., No. 2	14.00 to 14.50
St. Louis, No. 1	8.50 to 9.00
St. Louis, No. 2	10.00 to 10.50

SPECIFICATION PIPE

Boston	7.00 to 7.25
Eastern Pa.	12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	10.50 to 11.00
Chicago, No. 1	8.00 to 8.50
Cinn., No. 1 dl	8.50 to 9.00
Cinn., No. 2	5.50 to 6.00
Cleve., No. 2	7.00 to 7.25
Det., No. 1 new deal	9.00 to 9.50
St. L. No. 1	7.00 to 7.50
Val. new No. 1	13.00 to 13.50

MACHINE TURNINGS

Birmingham	7.50 to 8.00
Boston, dealers	3.35 to 3.50
Buffalo	6.00 to 7.25
Chicago	4.75 to 5.25
Cinn., deal.	6.00 to 6.50
Cleveland	6.00 to 6.25
Detroit	4.00 to 4.50
Eastern Pa.	7.50 to 8.50
N. Y., deal.	4.00
Pittsburgh	6.50 to 7.00
St. Louis	4.00 to 4.50
Valleys	9.00 to 9.50

BORINGS AND TURNINGS
For Blast Furnace Use

Boston	2.75 to 3.00
Buffalo	7.00 to 8.00
Cinn., deal.	5.50 to 6.00
Cleveland	7.50 to 7.75
Detroit, deal.	4.75 to 5.25
Eastern Pa.	7.00 to 8.50
N. Y., deal.	4.00
Pittsburgh	8.00 to 8.50

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.50 to 8.00
Boston., chem.	9.00 to 9.50
Boston, deal.	3.25 to 3.75
Buffalo	7.50 to 8.00
Chicago	3.75 to 4.25
Cinn., deal.	5.50 to 6.00
Cleveland	7.50 to 7.75
Detroit, deal	4.75 to 5.50
Eastern Pa.	8.50
E. Pa., chem.	14.00 to 14.50
N. Y., deal	4.50
Pittsburgh	8.00 to 8.50
St. Louis	6.00 to 6.50

PIPE AND FLUES

Cinn., deal	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	8.00 to 8.50
Chicago, net	7.00 to 7.50
Cincinnati	7.00 to 7.50
Eastern Pa.	9.50 to 10.00
N. Y., deal.	6.00
St. Louis	8.00 to 8.50

FORGE FLASHINGS

Boston, deal.	6.00 to 7.00
Buffalo	10.50 to 11.00
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.25 to 9.75

FORGE SCRAP

Boston, deal.	5.50 to 6.00
Chicago	14.00 to 14.50
Eastern Pa.	11.00 to 11.50

ARCH BARS, TRANSOMS

Chicago, net	12.00 to 12.50
St. Louis	11.50 to 12.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	10.50 to 11.00
Chi., steelworks	6.50 to 7.00
Cleveland	11.00 to 11.50
Eastern Pa.	11.50 to 12.00
Pittsburgh	11.50 to 12.00
St. Louis	8.00 to 8.50

STEEL CAR AXLES

Birmingham	14.00 to 15.50
Bos., ship. pt.	16.50 to 17.00
Buffalo	15.50 to 16.00
Chicago	16.25 to 16.80
Eastern Pa.	20.50
St. Louis	14.75 to 15.25

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	15.10 to 15.70
Chicago	14.00 to 14.55
N. Y., deal.	13.00 to 14.00
St. Louis	12.00 to 12.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.50 to 14.00
Buffalo, steel	14.50 to 15.00
Chicago, iron	12.50 to 13.00
Chi., roll steel	14.50 to 15.00
Cincinnati	11.50 to 12.00
Pitts., iron	14.00 to 14.50
Pitts., steel	16.00 to 16.50
St. Louis iron	11.00 to 11.50
St. Louis, steel	13.50 to 14.00
E. Pa. steel	16.75 to 17.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup.	10.00 to 11.00
Buffalo (mac.)	11.00 to 11.50
Boston, textile	11.00 to 11.50
Chicago, mach.	11.75 to 12.30
Chi., railroad	10.15 to 10.65
Chicago, agri.	9.80 to 10.35
Cinn., mach. cup., gross	14.50 to 15.50
Cleve. cupola	13.50 to 14.00
Det., net deal.	8.50 to 9.00
E. Pa. cupola	13.50
N. Y. cup. deal	8.00 to 8.50
N. Y., del. local foundries	14.00
Pitts., cupola	13.00 to 13.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma	10.75 to 11.25
St. L. No. 1	10.00 to 10.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. Mach. cast	11.50 to 12.50
Buffalo, break	8.00 to 8.50
Cleve., break	8.00 to 8.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl	7.00 to 7.50
Eastern Pa.	11.00 to 11.50
N. Y. No. 1 dl	7.00 to 8.00
N. Y. break. dl	7.00 to 7.50
Pittsburgh	9.50 to 10.00

MALLEABLE

Boston R. R.	14.00 to 14.50
Buffalo	14.00 to 14.50
Chicago, agri.	11.00 to 11.50
Chicago, R. R.	12.50 to 13.00
Cinn., R. R. dl.	12.50 to 13.00
Cinn., agri., dl.	12.50 to 13.00
Cleve., rail	13.50 to 14.00
Det. auto deal.	12.50 to 13.00
St. Louis, rail	10.00 to 10.50

RAILS FOR ROLLING
5 feet and over

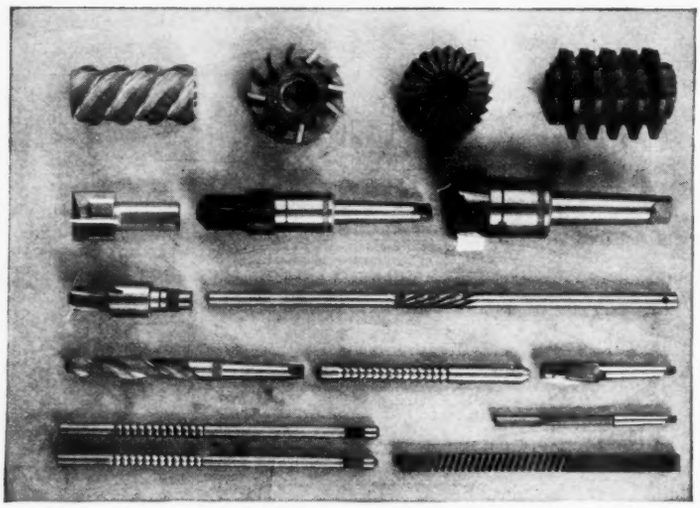
Birming., cup.	12.50 to 13.00
Boston	10.00 to 10.25
Buffalo	11.00 to 12.00
Chicago	13.50 to 14.00
Eastern Pa.	20.50
New York	9.50 to 10.00
St. Louis	12.50 to 13.00

LOCOMOTIVE TIRES

Chicago, cut	13.00 to 13.50
St. L. No. 1	11.00 to 11.50

LOW PHOS. PUNCHINGS

Chicago	12.50 to 13.00
Pittsburgh	15.50 to 16.00
Eastern Pa.	16.00 to 17.00
Buffalo	15.00 to 15.50



L-XX HIGH SPEED STEEL

L-XX represents the highest development in a high speed steel for general all-around work. The true value of this master high speed steel can be measured in terms of speed, feed, and cut as applied to modern machine tools.

L-XX is a modern development in high speed steel for the most advanced machine shop practice. Its superiority is clearly demonstrated on the first trials. Uniformity is one of its chief characteristics.

L-XX is especially recommended for turning, boring, planing, slotting and shaping tools, twist drills, milling cutters of all kinds, gear cutters, taps, reamers, punches, and dies and, in short, for any purpose where high speed steel can be used.

It is carried in stock in all standard bar sizes.

Let us send you the Ludlum Tool Steel Catalog giving applications and treatments for the entire Ludlum line.

LUDLUM

LUDLUM STEEL COMPANY WATERVLIET AND DUNKIRK, N. Y.

TOOL AND SPECIAL ALLOY STEELS NIROSTA, NITRALLOY & STRAUSS METAL

See the Ludlum A. S. S. T. Exhibit Booth No. 7B

4885

Boston—The scrap market has gone completely into the doldrums. Weakness of prices in other markets has left the situation less interesting than at any time in the previous month. Stocks are generally low. No. 1 machinery was marked down in the past week, which was the only change in price.

New York—Scrap prices again are easier, reductions being noted in four or five grades. No. 1 machinery cast is now $8 to $8.50, New York; yard steel for eastern consumption, $6; stove plate for mill consumption $5.25; skeleton steel $4.75; and turnings $4. The revisions in stove plate and skeleton steel follow recent reductions at Harrisburg, Pa.

Philadelphia—Steel and iron scrap is weak and adjustment is being made in various grades to match $11.50, delivered, for No. 1 heavy melting steel. No. 2 melting steel now is obtainable at less than $10.

Buffalo—With the expiration of important contracts Nov. 1 consumers have cancelled all undelivered tonnage and have dropped their offers for such material as blast furnace scrap and machine shop turnings $1 to $2 a ton. This has had a further demoralizing effect and has caused sharp reductions in dealers' offers.

Pittsburgh—Trading in steel and iron scrap is at a standstill as mills are seeking no tonnage and dealers lack unfilled orders. Prices continue to drift downward. Heavy melting steel is off 50 cents at $13.50 to $14, with scrap more freely available to dealers at the lower level. Other grades are lower in sympathy. Low phosphorus grades are dull and easier. Compressed sheets are offered below $13.50. The Pennsylvania railroad list includes only 25,420 tons, with No. 1 heavy melting steel offered.

Cleveland—Iron and steel scrap activity is practically at a standstill this week. Steelmaking continues low and consumers are taking no scrap. The outlet to the Valley is also cut off by complete curtailment of shipments. Quotations are nominally unchanged in absence of trading, but are considered weak. Yard stocks are heavy and dealers refuse material except at bargain prices.

Detroit—Decline of prices on steel and iron scrap has not been checked and several grades are quoted lower. There is no resistance to the downward tendency and further movement is expected, especially in open-hearth grades.

Cincinnati—The trend downward in prices of iron and steel scrap continues, especial weakness from lack of demand sending cast iron borings and turnings and loose sheet clippings to the lowest prices of the year. Borings and turnings are quoted at $5.50 to $6, and sheet clippings at $6.50 to $7. Heavy melting steel at $10.25 to $10.75 is resisting further decline.

St. Louis—Interest in iron and steel scrap continues on the wane. Purchasing by melters is almost at a standstill, tonnages being small and for immediate use.

Specific reductions were made on most of the steel specialties and on some grades of heavy melting steel.

Birmingham, Ala.—Quiet prevails in steel and iron scrap with prices weak but unchanged. Melters buy occasionally for immediate needs but there is no inquiry for future covering.

Toronto, Ont.—Dull trading with sales at the low point for the year features iron and steel scrap. Occasional orders are appearing for heavy melting steel. Buying is entirely confined to small lots for spot delivery. Iron grades have the principal call but demand is spotty. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Tin Plate Contracts Developing Slowly

Tin Plate Prices, Page 99

Pittsburgh—Activity in tin plate continues to decline moderately. A few contracts for the first half of 1931 have been signed although most consumers defer action. Despite the fact the first half price has been set at $5 per base box, consumers are reducing inventories. Mill operations are lower at 45 to 50 per cent.

New York—Some of the large tin plate consumers have closed within the past few days on first half requirements at $5, Pittsburgh, per base box.

Coke

Shipments of Foundry Fuel More Restricted — Production Continues Downward

COKE PRICES, PAGE 110

Pittsburgh—Heating coke is moving better for domestic than industrial purposes. Orders for the latter usually are limited to small lots, with little contracting. Demand for furnace coke is as dull as formerly. Foundry fuel shipments have moderated over the past month and now are seasonally light. Prices are unchanged. Beehive coke production in the Connellsville district for the week ended Oct. 25 was 16,790, against 18,050 in the preceding week and 56,750 tons a year ago.

Boston—Cooler weather, has increased the movement of domestic coke. Foundry contract supplies are more than sufficient for the slow melt.

New York—While contract specifications for foundry coke are more numerous, spot buying is light. Demand for beehive furnace coke is featureless. This grade is holding at $2.50 to $2.65, Connellsville, and beehive foundry is $3.50 to $3.75, Connellsville. Premium brands of beehive foundry are $4.70 to $4.85, Latrobe, Pa. By-product foundry coke is $9 to $9.40, delivered Newark, N. J.; $9, Philadelphia; and $11, New England.

Chicago—Shipments of by-product foundry coke in October gained slightly over those of September. About 50 per cent of the contracts for first half of 1931 have been made at present prices of $8, ovens, and $8.75, Chicago switching district. Some contracts have been closed for all of 1930.

Cincinnati—Specifications for foundry coke are light. Shipments in October were about equal to those in September.

St. Louis—Demand for domestic and industrial heating coke is the only active feature of the market. October shipments of metallurgical grades were less than those of September.

Pacific Coast

Court Action Holds Up Important Pipe Plate Tonnage—Awards for Week Fairly Heavy—Pipe Awards of Fair Proportions—Gulf-Pacific Pig Iron Rate to Be Raised Jan. 1

Seattle—Steel awards in the Pacific Northwest this week approximated 2500 tons in addition to 8600 tons of plates involved in 12 miles of 48 and 66-inch steel pipe for Seattle water system improvements. The latter contract has been taken by the Queen City Construction Co., Seattle, for whom the Western Pipe & Steel Co., San Francisco, will fabricate the pipe. However, the matter is still in the courts and will not be settled for at least another week. In the meantime the contracting firm is proceeding with preliminary operations.

Bars, Plates and Shapes

Mill prices on bars, plates and shapes are steady unchanged, despite lessened inquiry. Reinforcing is 2.30c, merchant bars and shapes 2.35c and plates 2.10c up.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Steel mills report unchanged operations, many orders being in car lot tonnages. Awards this week included 231 tons of reinforcing for an addition to the Inland Empire Paper mill, Spokane, divided between Northwest Steel Rolling Mills and Pacific Coast Steel Corp., Seattle, through the Austin Co., builder. Several important tonnages are pending, including an unstated amount for the 25-story $2,225,000 city light tower, 400 tons for Edmond Meany hotel, 350 tons for the Sixth avenue garage and 42 tons for the United States fisheries building, general contracts for all of which projects have been awarded. The Northern Pacific railroad has awarded 4200 kegs of track spikes, 500 tons, to the Pacific Coast Forge Co., Seattle, steel for which will be furnished by the Pacific Coast Steel Corp., Seattle.

Contract for a 129-foot steel tug, involving 250 tons of plates and shapes, for Young Bros. Ltd.,Honolulu, T. H., went to the Bethlehem Shipbuilding Co., San Francisco, on a bid of $134,475. Opening of bids for a pipe line at Tacoma, Wash., involving 600 tons, has been postponed to Nov. 3.

The largest structural contract of the week involved 550 tons for the power house at Rock Island, Wash., for the Puget Sound Power & Light Co. placed with an unnamed eastern manufacturer by Stone & Webster, general contractors. The Austin Co., which has the contract for new buildings for the Inland Empire Paper Co., Spokane, has placed 266 tons of shapes with its Bliss mill, Cleveland. Bids are to be opened this week for the Burrard inlet bridge, Vancouver, B. C., calling for 3200 tons of structurals and 2000 tons of reinforcing. The navy department has called tenders for a steel frame warehouse at the Puget Sound navy yard. The provincial government is receiving bids at Victoria, B. C., to be opened Nov. 3, for the Haguelgate suspension bridge involving 375 tons of structurals. About 31,000 feet of wire rope is required.

The Gulf-North Pacific conference announces that the freight on pig iron from Gulf ports to this territory will be increased from $4.50 to $5, gross ton, in lots of 25 tons or more, effective Jan. 1.

Pipe Awards Moderate

Cast iron pipe awards totaled nearly 600 tons this week, of which 500 tons was booked by the Seattle office of the American Cast Iron Pipe Co. for the White River Lumber Co., Enumclaw, Wash. About 85 tons for the Magnolia boulevard improvement project, Seattle, went to French producers through local contractors. New projects include 260 tons for Hoquiam, Wash., bids Nov. 10, and 135 tons for Renton, Wash., bids Nov. 4.

Structurals Most Active

San Francisco—(*By Air Mail*)—Movement of iron and steel products on the Pacific Coast is by no means pronounced, and demand has tapered slightly during the past ten days. The structural steel market is the most active and some fair sized tonnages are now up for figures. The most important booking of the week and the third largest plate award of the year, 5000 tons for a pipe line for San Francisco, was placed with the Western Pipe & Steel Co.

Bars, Plates and Shapes

Most concrete bar awards involved lots ranging from 40 to 70 tons. Only one project over 100 tons was reported. A new jail at Ventura, Calif., calling for 100 tons, was placed with an unnamed company. Included among inquiries pending, bids on which have just been opened, are 400 tons for road work near Burley, Idaho. Prices continue at 2.50c, base, on carload lots, of out-of-stock material in the Los Angeles and San Francisco districts.

Merchant bar steel prices are by no means firm and while the larger interests are endeavoring to maintain 2.25c, c.i.f., consumers appear to find little difficulty in obtaining quotations as low as 2.10c.

With the exception of the San Francisco pipe line, plate awards all involved small lots. Bids have been opened on 1700 tons for a 38 to 54-inch welded steel pipe line for Los Angeles. Bids will be opened in Oakland Nov. 3 for 390 tons for a 24-inch, ¼-inch plate, welded steel pipe line for the East Bay municipal untility district. Quotations continue 2.05c, to 2.15c, c.i.f.

Structural shape awards fell off considerably from the totals reported during the past four weeks, aggregating less than 700 tons. The McClintic-Marshall Co. secured 200 tons and 160 tons respectively for a factory in South Gate, Calif., and a new jail structure in Ventura, Calif. The Pacific Fruit Express Co. is in the market for 4000 tons of plain material. Bids have been opened on 1500 tons for a theater in Oakland, Calif. The largest new inquiry calls for 400 tons for a new light plant for Pasadena, Calif., bids on which will be opened Nov. 14. Quotations continue 2.15c to 2.25c, c.i.f. on plain shapes.

Other Finished Material

San Diego has awarded 189 tons of cast iron pipe for the improvement of Fifty-fourth street to an unnamed interest. Other awards were in lots of less than 100 tons. Bids will be opened Nov. 5 for 105 tons for Alhambra, Calif. New bids are to be called for at once by Eureka, Calif., for approximately 100 tons. Steel pipe demand has shown little improvement and stocks are well rounded. No action has been taken by the Pacific Gas & Electric Co. on its inquiry for 400 tons of 24-inch line pipe.

Class I railroads Oct. 8 had 389,399 surplus freight cars in good repair.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

	Steel		Iron		
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, N. Y.	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland. ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York	3.55c-3.65c
Phila.*†	3.60c
Pitts.**	3.40c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo	4.40c-4.60c
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.23c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c)	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

ACME

Hot and Cold Rolled Strip
Electro Galvanized Strip

....

Long Length Coils
or Cut-to-Length

1880 ACME STEEL COMPANY 1930

OUR GOLDEN ANNIVERSARY

General Offices: 2840 Archer Avenue ... Chicago

BROOKLYN DETROIT MILWAUKEE SAN FRANCISCO

STEEL

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 9.50c, del., Conn. for copper

Sheets	
Yellow brass (high)	16.62½
Copper, hot rolled	19.25
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	21.50
Seamless copper	21.62½
Rods	
Yellow brass (high, full turnings)	14.87½
Naval brass	17.00
Anodes	
Copper, untrimmed	16.75
Wire	
Yellow brass (high)	17.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	6.75 to 7.00
Chicago	6.25 to 6.75
Cleveland	6.50 to 7.00
St. Louis	6.50 to 6.75
Heavy Yellow Brass	
New York	4.50 to 4.75
Heavy Copper and Wire	
New York	7.25 to 7.75
Boston	7.25 to 7.50
Chicago	7.50 to 7.75
Cleveland	7.00 to 7.50
St. Louis	6.25 to 6.75
Red Brass Borings	
New York	6.25 to 6.50
Yellow Brass Tubing	
Cleveland	4.00 to 4.50
Light Copper	
New York	6.50 to 6.75
Chicago	6.25 to 6.75
Cleveland	6.00 to 6.50
St. Louis	6.50 to 6.75
Light Brass	
Boston	3.25 to 3.75
Chicago	4.00 to 4.25
Cleveland	3.00 to 3.50
St. Louis	3.50 to 3.75
Zinc	
New York	2.00 to 2.25
Cleveland	1.25 to 1.50
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	11.50 to 12.50
Clippings, hard, Cleveland	8.00 to 9.50
Borings, Cleveland	4.50 to 5.00
Mixed cast, Cleveland	6.00 to 6.50
Mixed cast, Boston	5.50 to 6.00
Cast, St. Louis	7.00

Secondary Metals

Remelt aluminum No. 12	13.50
Brass ingot, 85-5-5-5	10.00

Quicksilver Is Lower

New York—Quicksilver is weak at $110.50 to $111 a flask.

Metals

Copper and Zinc Prices Display Strength but Tin Falls Off—Lead and Aluminum Slow

New York—Copper and zinc prices have become decidedly stronger in the past week but tin has gone in the opposite direction. Buying of copper has been exceptionally large in the export market and of good size in the domestic. Buying of zinc also has improved but business in other metals has been light.

Consumption of metals shows little change, with a tendency to decrease, after a slight improvement earlier in the autumn. Strength in zinc and increased firmness in copper are due to prospects of smaller production and the sensitiveness that develops in any market of extremely low prices such as have ruled lately.

Copper—Metal has become difficult to buy at 9.50c, Connecticut. Some business still is being done at this price but producers could book much more if they so desired. They already have sold well at this price for shipments during the next few months, and have prospects of a nearer balance between demand and supply on account of conferences on curtailment. Export sales have been around 5000 tons daily. It is believed in the market that curtailment will be extended, but after a week of conference between foreign and domestic officials the situation still is uncertain. Domestic mines have curtailed substantially this year but many foreign mines have not.

Zinc—Prime western prices have recovered suddenly. Curtailment is said to have made progress, but definite information still is lacking. At the same time, consumers have relatively light protection. Consumption shows little change. The ore market is unchanged at $26 a ton. Most smelters have been reluctant sellers since last Friday.

Tin—Following a recovery to about 27.00c, the tin market has lost abount half of its gain. Lack of demand and disappointing statistics for October have put prices down. Whereas a decrease of 1000 tons of more had been expected in the world's visible supply, the decrease was only 474 tons. It is predicted that November shipments from the Straits will increase to more than 8000 tons. United States deliveries last month were 7580 tons. Consumption obviously cannot be much over half of last year's rate, but deliveries were up to last year's monthly average.

Lead—Business has been light, but the market still is a fair margin under London and so prices here are steady.

Aluminum—New business is small but prices are unchanged.—*Daily Metal Trade.*

Coke By-Products Firmer; Sulphate Price Advanced

New York—Under the recently announced contract prices, sulphate of ammonia has advanced to $1.90 per 100 pounds, delivered to the fertilizer trade. Distillate prices are firm. Demand is fair. Restricted coking operations continue with reduced output. Automotive interests are taking more toluol and xylol. Fuel demand for benzol is holding steady. Phenol buying is spotty with a slight improvement noted in some quarters. Prices are firm with 17.00c covering the bulk of current business. Naphthalene buying is seasonally good, although largely for spot. Some contracting is being done.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.90

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Oct. 29	9.50	9.62½	9.37½	27.00	27.25	5.10	4.95	3.97½	22.90	7.25	35.00
Oct. 30	9.50	9.62½	9.37½	27.00	27.25	5.10	4.95	4.00	22.90	7.25	35.00
Oct. 31	9.50	9.62½	9.37½	26.75	27.10	5.10	4.95	4.10	22.90	7.25	35.00
Nov. 1	9.50	9.62½	9.37½	26.62½	27.00	5.10	4.95	4.20	22.90	7.25	35.00
Nov. 3	9.50	9.62½	9.37½	25.75	26.20	5.10	4.95	4.25	22.90	7.12½	35.00

Europe

Entente Members Compromise and Extend Agreement to End of Year with Full Penalties

London—(*By Cable*)—The steel entente has been extended to the end of this year, with the reinstatement of penalties for overproduction and so-called territorial protection. Belgium, Germany and Luxemburg have agreed to cease dumping steel in French markets, and the French have accepted a system of fines for the payment of $4 for every ton produced in excess of their quotas.

On the basis of present production in France this would mean a monthly tribute of $200,000 to the entente if overproduction is continued. French producers ignored the quota restriction, claiming steelmakers in other countries were over-riding the price agreements. This is considered a hopeful compromise, and before the end of the year an entirely new agreement may be entered into by the entente.

A domestic wire syndicate has been virtually formed in France, leaving prices uncontrolled, but allocating tonnages. A steel bar syndicate also has been organized in France which will grant export bounties.

European iron and steel markets show little improvement. Demand for Middlesbrough and East coast hematite is moderately stronger. The position of the British steelworks remains unfavorable, continental offers being made considerably below British prices, with business dull owing to heavy stocks. Makers of wrought iron in Scotland have booked an order for 3000 tons of strip and tubes for delivery to Canada. Belgian railmakers have booked 12,000 tons for shipment to the Congo.

British Lose Hope of Fall Revival; Some Large Tonnages Placed

Birmingham, Eng.—Traders are beginning to lose hope in an autumn revival in iron and steel. Sentiment is poor and the only buying is hand-to-mouth.

A few hopeful factors emerge including the fact that Henry Ford's new factory at Dagenham on the Thames will use as much British steel as possible in the manufacture of automobiles. But this, though encouraging for the future, is no help to British steelmakers at present for the new work is not likely to be operating full for two years, according to Sir Percival Perry, chairman of the British Ford Co.

A more definite encouragement is given by announcement at the annual meeting of George Turton Platts & Co. at Sheffield that the firm has booked the largest order for complete buffers ever placed with a Sheffield concern. The chairman, G. H. Cowen, states that these orders will take about 2000 tons of steel and they are for patented buffers specified for five big railways.

The Cleveland Bridge & Engineering Co. Ltd. has received a contract for bridge and railway work in Central Africa to the value of £1,434,437. Construction of the bridge and connecting railway, covering some 25 miles, is expected to take about three years to complete and will secure direct communication between Nyasa and the port of Beira.

This contract has been placed by the Central Africa Railway Co. Ltd. and the Transzambesia Railway Co. Ltd. J. R. Dixon, chairman and managing director of the Cleveland firm, said in an interview with the *North Eastern Gazette* that the contract was the biggest ever secured by his firm. The amount of steel to be used in constructing the bridge is 15,000 tons and this will be of British manufacture.

In the Middlesbrough district the steel trade shows a slightly better feeling, probably because a few orders have been released following decision to maintain prices. No change is now expected before the end of the year when the association will again review the position.

Railroads are making arrangements to replace bridges but have a limited sum to spend and are exercising economy. A number of these inquiries have been received by Birmingham structural firms but they know that it is useless to tender except on the very lowest possible terms, owing to competition, which is more severe than at any time since the war. Steelworks in the Midlands are unable to operate more than about three days a week.

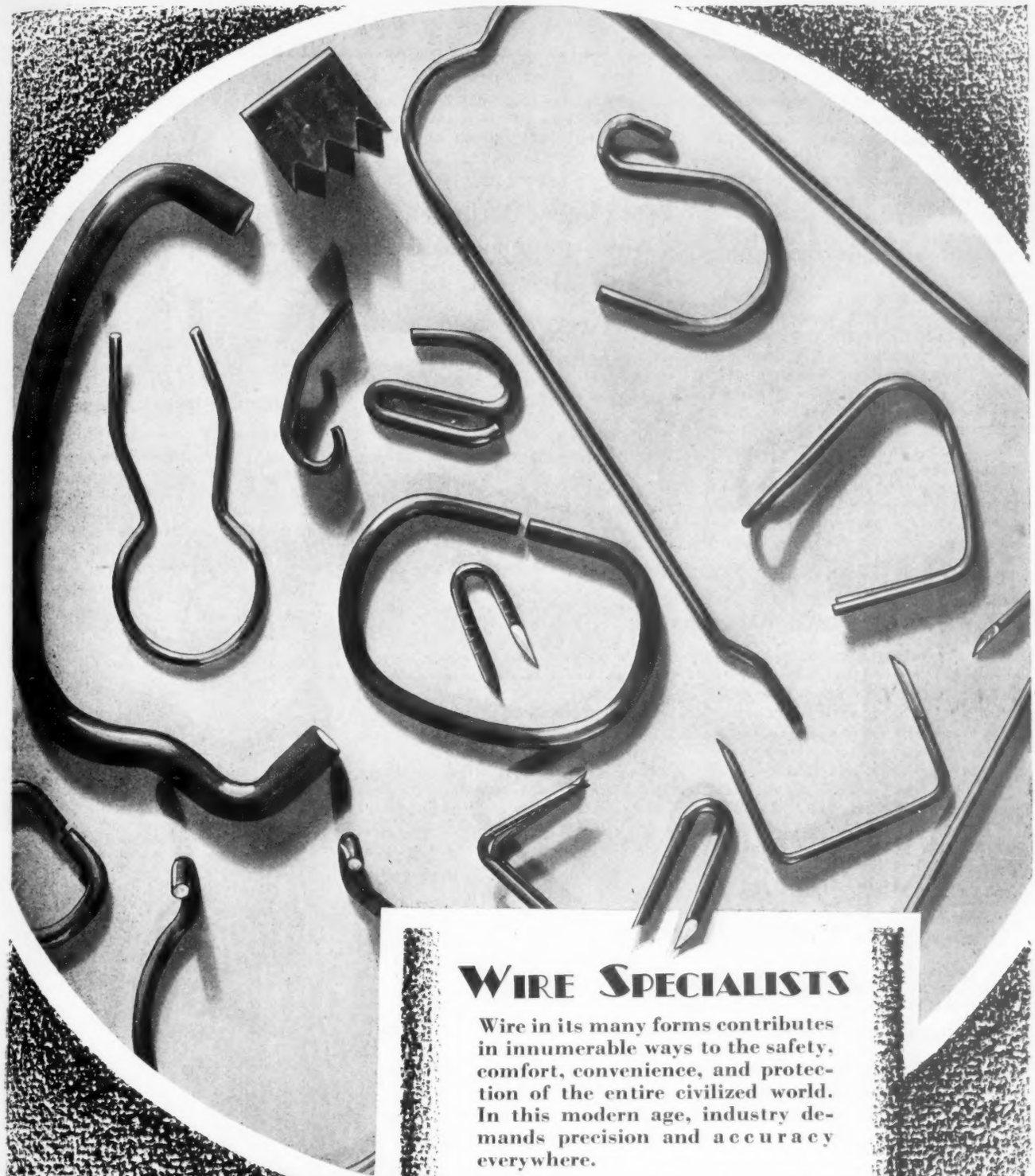
Scrap merchants accustomed to handle heavy tonnages find that steelworks have suspended delivery until stocks are reduced. Prices are nominal owing to limited business. They have, however, fallen to a low level for any actual business. It is difficult to obtain more than about £2 13s 6d ($12.99), delivered South Wales, for steel scrap.

The topic of interest on the Birmingham exchange is the reappearance of Continental pig iron in the Midland district. It has been bought as low as £3 7s 6d ($16.39), which compares with £3 10s ($17.01) for Northamptonshire No. 3 foundry, delivered. It is understood to come from Luxemburg.

There is no substantial market for either British or foreign pig iron owing to scarcity of orders in the foundry but a number of pig iron consumers are sufficiently aggrieved by the action of the Central Pig Iron Producers association in maintaining prices at what is considered an artificial level to welcome a saving of 2s 6d a ton ($.60).

World Steel Depression Hurts Belgian Market

Brussels—Conditions of the iron and steel industry in Belgium are distinctly unsatisfactory, and practically all the works are operating on a day-to-day basis so far as new orders are concerned. The general sentiment is somewhat pessimistic, as no sign of immediate improvement is to be seen. In addition to the unsatisfactory state of the market for several months, revolutions and political troubles in various parts of the world, particularly in South America, are further reducing the volume of inquiries. This is also reflected in the freight market and in the fact that a large number of ships are idle in Antwerp harbor. A number of large works in Belgium, such as Angleur-



WIRE SPECIALISTS

Wire in its many forms contributes in innumerable ways to the safety, comfort, convenience, and protection of the entire civilized world. In this modern age, industry demands precision and accuracy everywhere.

Those who specialize in making wire forms are better prepared to fill your requirements—and we are specialists in wire forms of all kinds — staples, handles, hooks, rings, and unlimited shapes made to your closest specifications. Tell us your needs and we will give you our quotations.

E. H. TITCHENER & CO.

500-506 WALNUT ST., BINGHAMTON, N. Y.

YOUR INQUIRIES SOLICITED

Athus, are restricting operations. Societe Monceau-sur-sambre and Alliance-Monceau each has blown out two furnaces.

Competition in pig iron is severe and foundry pig iron now is quoted at £2 12s ($12.60) f.o.b. Antwerp. Strong competition is felt in the Far East markets from the Tata Iron & Steel Co.

Little business is going in semi-finished steel. Orders apparently are in the hands of British merchants, who are placing them little by little in the hope that prices will drop further. The following quotations have been made for semifinished products: 6-inch blooms, £3 5s ($15.75); 2-inch billets, £3 10s ($17); sheet bars, £3 12s ($17.40).

Merchant bars have dropped another 1s (24c) per ton and now are offered at £4 1s ($19.60) for square and round bars. A German works has taken an order for 3000 tons of reinforced concrete bars for the Argentine Republic at £3 17s 6d ($18.80). Flat bars are offered at £4 16s ($23.25).

The market for beams is practically lifeless. The works of Societe du Nord et Est, which were endeavoring to obtain some orders, have sold only 75 tons during the whole of the past week. Normal sizes are quoted at £3 14s ($17.95), and British sizes, for which there is hardly any business, are quoted at from £3 16s to £3 17s ($18.40 to $18.60). Hoops now are quoted at £4 15s ($23). Quarter-inch plates range from £4 16s to £4 17s, ($23.25 to $23.50), and 3-millimeter sheets are quoted at £4 17s 6d ($23.60).

British Labor Declines

London—The British ministry of labor gazette gives a dark picture as to unemployment in September, 1930.

In the pig iron industry, employment during September showed a slight improvement, but remained bad. The percentage of workmen unemployed was 29.9 Sept. 22, compared with 30.5 Aug. 25, and 9.9 Sept. 23, 1929. Returns from 76 firms, employing 14,596 workpeople, at the end of September, 1930, showed an increase of 1.4 per cent compared with August, but a decrease of 28.8 per cent compared with September, 1929.

French Exports at Record

Paris—Exports of pig iron from France in July rose to their highest point this year to date. On the other hand, exports of other iron and steel products, including ingots, semi-finished steel, merchant steel, structural steel, rails, plates and sheets, hoops and bands, wire products, wheels and axles, and scrap, were the lowest for the year to date. The July imports of pig iron and steel were the lowest for the year to date. Comparative figures follow, in metric tons:

Mon. ave.	Pig iron	Other iron and steel products	Pig iron	Other iron and steel products
1927	3,230	7,440	69,640	404,730
1928	3,365	8,320	52,215	368,410
1929	3,345	15,100	46,760	279,610
1930				
Jan.	11,806	22,374	44,016	259,133
Feb.	20,463	24,965	44,977	297,208
March	16,747	28,024	42,522	269,752
April	15,195	25,347	41,630	277,886
May	15,803	23,020	39,576	263,606
June	12,715	24,261	43,046	291,279
July	10,847	21,167	45,706	207,023

British Output Gains

London—Production of pig iron in September gained somewhat over August. September output of steel ingots and castings was above that of August, when output was affected by holidays, but much below that of September, 1929. Comparisons are:

(Gross tons)

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	338(*)	855,000	638,600
1927	149	607,700	758,100
1928	132	550,900	710,400
1929	162	631,600	804,560
1930			
Jan.	159	560,000	771,100
Feb.	162	607,000	776,400
March	157	665,800	826,100
April	151	619,600	696,100
May	141	614,500	692,800
June	133	563,200	600,100
July	105	486,100	621,400
July	105	486,100	621,400
Aug.	104	416,700	451,300
Sept.	104	425,000	580,600

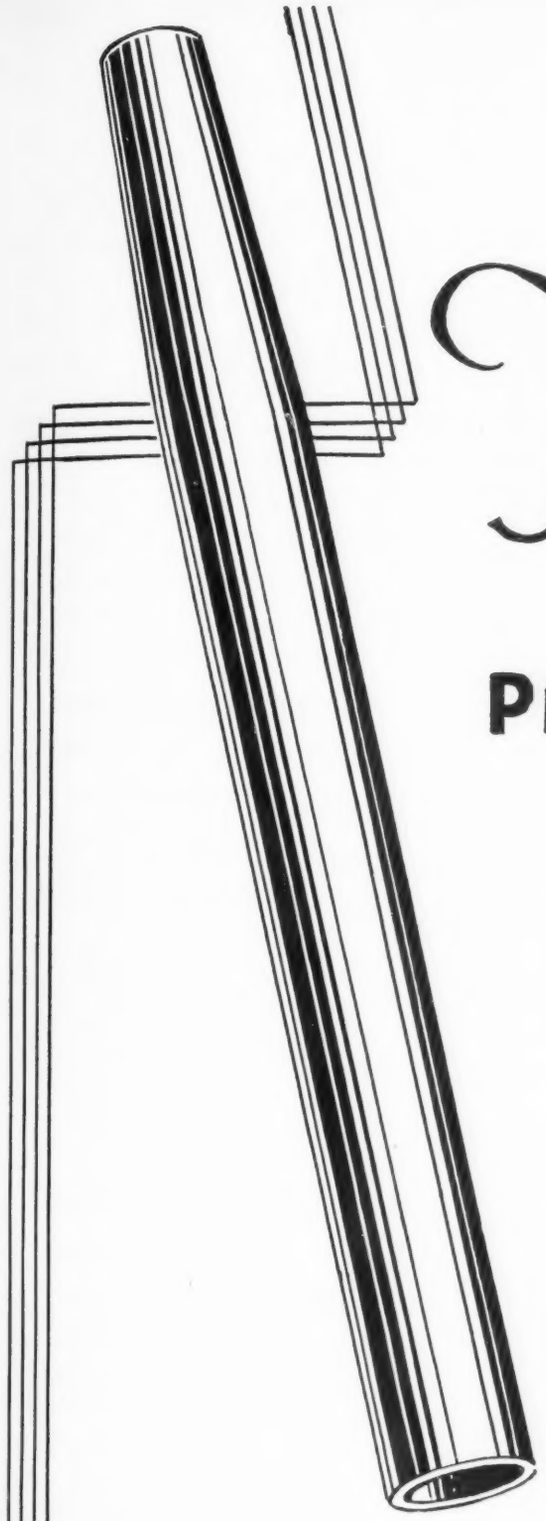
(*) Average for year.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 3	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$15.43	3 3 6*	$12.64	2 12 0	$12.64	2 12 0	$13.37	2 15 0
Basic-bessemer	15.92	3 5 6†	12.15	2 10 0	12.15	2 10 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.25	3 11 0	.....	.....	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$27.95	5 15 0	$16.28	3 7 0	$16.28	3 7 0	$17.01	3 10 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$32.08	6 12 0
Merchant bars	1.68c	7 15 0	.87c	3 19 0	.87c	3 19 0	.91c	4 3 0
Structural shapes	1.68c	7 15 0	.80c	3 12 6	.80c	3 12 6	.84c	3 16 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.02c	4 13 0	1.02c	4 13 0	1.05c	4 15 0
Sheets, black, 24 gage	2.17c	10 0 0	1.80c	8 3 9	1.80c	8 3 9	1.98c	9 0 0
Sheets, galvanized, 24 gage, corrugated	2.52c	11 12 6	2.35c	10 13 9	2.35c	10 13 9	2.64c	12 0 0
Bands and strips	2.17c	10 0 0	.98c	4 8 9	.98c	4 8 9	1.05c	4 15 0
Plain wire, base	2.06c	9 10 0	1.46c	6 12 6	1.46c	6 12 6	1.33c	6 1 0
Galvanized wire, base	3.04c	14 0 0	1.60c	7 5 0	1.60c	7 5 0	1.61c	7 6 0
Wire nails, base	2.39c	11 0 0	1.32c	6 0 0	1.32c	6 0 0	1.32c	6 0 0
Tin plate, base box 108 pounds	$ 4.13	0 17 0	.....	.....	.....	.....	$ 8.75	1 15 0
Domestic Prices at Works or Furnace—Last Reported				*Francs*		*Francs*		*Marks*
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43	3 3 6	$19.21	490(2)	$16.18	580	$19.78	83
Basic pig iron	15.80	3 5 0	20.58	525(1)	12.83	460	21.09	88.50
Furnace coke	3.16	0 13 0	6.58	168	5.30	190	5.12	21.50
Billets	27.95	5 15 0	21.56	550	17.58	630	28.00	117.50
Standard rails	1.79c	8 5 0	1.46c	810	1.61c	1,240	1.47c	136
Merchant bars	1.68c	7 15 0	1.04c	575	.97c	745	1.48c	137
Shapes	1.84c	8 10 0	1.12c	620	.97c	745	1.45c	134
Plates, ship, bridge and tank	1.95c	9 0 0‡	1.46c	810	1.15c	890	1.65c	153
Sheets, black, 24 gage	2.28c	10 10 0	2.63c	1,460	2.41c	1,850	1.36c	126
Sheets, galvanized 24 gage, corrugated	2.52c	11 12 6	3.74c	2,075	2.60c	2,000	3.67c	340
Plain wire	2.06c	9 10 0	2.03c	1,125	2.15c	1,650	2.45c	217
Bands and Strips	2.17c	10 0 0	1.28c	710	1.37c	1,050	1.72c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.



Tubes

PROPELLER SHAFTS

Automotive engineers have found Michigan welded steel tubing to be better adapted for propeller shafts for the following reasons:

1. It is uniform in wall thickness.

2. It machines easily.

3. There is less vibration at high peripheral speed.

4. The tubing is exhaustively tested by the most efficient method known.

5. The steel from the basic billet form to the finished shaft has one constant method of procedure which makes the shaft so it will operate under a longer period of vibration than any other method known.

CHICAGO—Steel Sales Corp., 129 South Jefferson
ST. LOUIS—E. R. Hensel Steel & Copper Co., Planters Building

MICHIGAN

STEEL TUBE PRODUCTS COMPANY

BUFFALO STREET, DETROIT

Machinery

EASTERN industrial centers continue to show slightly more machine tool activity than do those of the Middle West, some of the Eastern business being traceable to shipyards and railroad repair shops. General recovery in orders and inquiry is discouragingly slow, and a number of builders and dealers report that their averages for October fell below those for September. Many machine tool builders are giving thought to new products, but the depletion or diversion of funds budgeted for 1930 is holding up development. Pressure is being exerted on directors for approval of generous development appropriations for 1931.

New York—While October machine tool volume was slightly larger than the previous month, improvement is not great. Sales and inquiry continue light and buyers are slow to close on business which appeared imminent two and three months ago. Only one or two tools at a time are being booked and several of the largest buying industries during the last two years are out of the market for the remainder of 1930. In most instances refrigeration, electrical, airplane engine and radio shops are well equipped with machinery. Regardless of general business conditions, the total possible volume from most of the so-called "new industries" in the way of new purchases would appear to be light.

Ball bearing plants are curtailing, those in Connecticut averaging no better than three days production a week. Railroad buying is off. Until the automotive and railroad demand starts, improvement is not expected. Most railroad repair shops in the East, however, are busier. Shipyards and the metalworking industries continue to be the most likely prospects. Grinding machinery demand has slumped. Machinery building plants are operating on curtailed schedules, although efforts are being made to keep shop organizations intact by distribution of work.

Worcester, Mass.—Machinery demand is quiet. A few orders from Russia are trickling through but they mostly are small. General Electric has placed several machines with Reed-Prentice Co. for its Pittsfield plant but otherwise the domestic market shows little strength. Grinders are slow. The general situation is little changed for the past several weeks.

Pittsburgh—Activity in machine tools continues to drag. October business was about equal to that of September which was seasonally light. Inquiry brings little encouragement to sellers of any early improvement in buying. Some inquiries continue for the purpose of determining prices with which to adjust 1931 budgets. What orders are appearing usually call only for single tools. Little business from railroads is in prospect.

Cleveland—Several machine tool builders and machinery dealers report that their October business showed little or no improvement over September. In fact, some of them report orders and inquiry both reached new lows during October, and that recovery is not as yet apparent. This discouraging state of affairs is reflected in quotations on the stocks of local machine tool companies which are listed on the exchange, and it is reflected also in the employment situation. The stagger system of employment is being resorted to in an effort to hold organizations together and to relieve distress by spreading wages as far as possible.

In some cases, machine tool builders, who in the past have adhered closely to standard lines, are undertaking to build special machines for certain good customers, explaining this as a temporary expedient. Others actively are seeking or developing new products, not necessarily metalworking equipment, with the frank intention of broadening out their lines of manufacturing in an effort to counteract the violent fluctuations of the machine tool business.

Indications are that development and promotion of new and improved machine tools, which is now curtailed seriously by exhaustion on diversion of 1930 budgets, will be pushed much more vigorously after the first of the year. That is, such plans will be pushed vigorously if the efforts of engineering and sales executives in urging the adoption of generous budgets for such work in 1931 have effect upon boards of directors.

Chicago—While a number of feelers concerning prospective buying programs for next year are before the machine tool market, and while sentiment seems slightly better, business continues lifeless. Several houses report October the dullest month of the year, both in sales and billings, despite activity early in the month which indicated continuation of the September spurt. Chicago board of education is asking for complete estimates by Nov. 7 on the $500,000 Lane Technical high school program which is to be closed next year. General Electric Co. purchased a milling machine here, and several presses and sheet metal working tools were sold. A local dealer closed on several lathes for school shops for an eastern city. Sales of used tools during the week were relatively higher than new equipment. A fair amount of shopping for used equipment is reported. Most dealers state there is no immediate prospect of price reductions.

Employment in Steel and Allied Lines Cut in August

(*Concluded from Page 27*)

ments the average number employed was 238,220, a decrease of 2.3 per cent from September. Their weekly payrolls were reduced to $6,432,192, or 3.5 per cent.

Employment in cast iron pipe foundries was cut 2.1 per cent, and payroll totals 0.8 per cent. Structural steelwork shops reduced employment 1.1 per cent, and payrolls 5 per cent. The decline in employment in machine tool plants was 7.6 per cent, and in payrolls, 7.3 per cent.

Inland Aids Its Jobless

Inland Steel Co., Chicago, employes earning more than $125 a month have been asked to contribute sums ranging from 2 to 5 per cent of their salaries for the relief of fellow workers for whom no employment can be provided under present conditions, according to a plan developed by the employes. The company will contribute an equal amount.

Tunisia Mines More Ore

Washington—Tunisia in 1929 produced more iron ore than in the past five years, states the department of commerce. Last year's output was 977,000 metric tons, compared with 909,000 tons in 1928. Four mining properties contributed most of this output. The number of workers employed in 1929 was 1809. Exports from Tunisia in 1929 totaled 974,416 tons, against 891,708 tons in 1928.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Merrimac Oil Burner System, 123 Merrimac street, is in the market for two spindle drills and portable electric drill vises.

BOSTON—O. H. Comins, 731 Hancock street, plans to rebuild a 2-story shop recently damaged by fire. Cost is estimated at $40,000.

CAMBRIDGE, MASS.—H. J. Eisenhauer, 30 Inman street, is reported to be inquiring for a 24-inch by 26-foot planer, with or without motor drive.

WALTHAM, MASS.—Illinois Wire & Mfg. Co., Joliet, Ill., is building a plant unit and storage building here.

WORCESTER, MASS.—Northeastern Storage & Distribution Co. proposes to build a terminal and warehouse unit here. Total expenditure, approximately $1,000,000.

WORCESTER, MASS.—Ashey Mfg. Co. has been organized with John P. Ashey as president. Company will establish a plant for the manufacture of stamped metal products.

PAWTUCKET, R. I.—J. D. Crosby Co., Dean street, has let contract for a 2-story addition to be used for the manufacture of cold rolled strip steel. Approximate cost, $40,000.

PROVIDENCE, R. I.—New England headquarters, Bell Telephone Laboratories, is having preliminary plans prepared by Voorhees, Gmelin & Walker, 101 Park avenue, New York, for a laboratory. Estimated cost, $40,000.

New York

BROOKLYN — Hawley Reversible Rail has been incorporated with $20,000 capital by W. R. Murphy, 189 Montague street, to make tools.

BROOKLYN—Prominent Iron Works has been incorporated with $10,000 capital by J. I. Shapiro, 51 Chambers street, New York.

BUFFALO — Simon J. Hurst, 170 Cleveland avenue, who recently organized the Hurst Bronze Co., proposes to establish a plant for bronzeworking.

BUFFALO—Auto-Cig has been incorporated with 200 common shares by Donovan & Raichle, Marine Trust building, to make vending machines.

COHOES—Capitol District Foundry & Machine Corp. has been incorporated with $40,000 capital by MacLean & Neary.

GREAT NECK—Great Neck Manufacturers have been incorporated with $20,000 capital by L. M. Wolf, to engage in hardware manufacturing.

NEW YORK—Wheeler Shipyard has been incorporated by A. J. Stern, 26 Court street, Brooklyn, N. Y., to deal in vessels.

NEW YORK—Glowlights has been incorporated with $20,000 capital by H. D. Guthrie Jr., 342 Madison avenue, to deal in metal articles.

NEW YORK—Watairway Mfg. Corp. has been incorporated with 150 common shares by J. M. Edelson, 475 Fifth avenue, to deal in plumbing fixtures.

NEW YORK—Fourfold Screen Co. has been incorporated with 400 common shares by Lind, Shlivek, Marks & Brin, 10 East Fortieth street, to make screens.

NEW YORK — Royal Electrical Equipment Co. has been incorporated with $20,000 capital by I. I. Sternbert, 501 East 181st street, to deal in machinery.

NEW YORK—Manhattan Bale Tie Co. has been incorporated with 100 common shares by Orea & Fitzpatrick, 181 East 121st street, to make wire bale ties.

NEW YORK—Sensitive Electrical Instrument Co., 142 East Thirty-second street, proposes to build a 1-story, 60 x 140-foot electrical laboratory at Bronx boulevard and Bullard avenue. Cost is estimated at $20,000.

NEW YORK—New York, New Haven & Hartford railroad has awarded contract to the Austin Co., 16112 Euclid avenue, Cleveland, for the design and construction of a warehouse. Estimated cost, $250,000.

Pennsylvania

GROVE CITY—Grove City college, recently noted as planning a science unit, advises through Weir C. Ketler, office of the president, that contract has been awarded to R. B. McDannel Co., New Brighton, Pa., for a science unit, 90 x 204 feet. A machine shop is included. (Noted Oct. 23.)

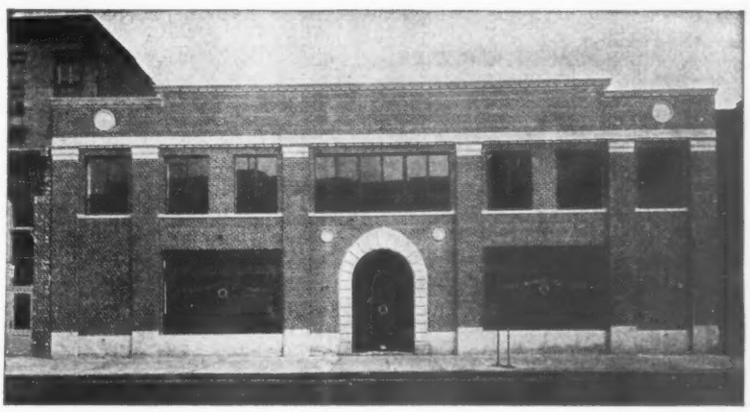
HOMESTEAD—Superior Iron & Wire Works has purchased a 2-story plant, 98 x 103 feet, at Third avenue and McClure street, from Levinson Steel Co., 33 Pride street, Pittsburgh.

PHILADELPHIA—Philadelphia Gas Works Co., 1401 Arch street, will close bids Nov. 7 for the construction of a machine and plate shop at Castor road and Balfour street. Plans are private.

PHILADELPHIA — Star Expansion & Bolt Co. and Bay State Tap & Die Co., at 410 Commerce street, recently suffered damage to their plants by fire. Congress Radio Co., at 425 Market street, also suffered damage.

PHILADELPHIA—Penn Scale Mfg. Co. Inc., has been incorporated with 200 no par shares by Max Gurevitz, 5134 Parkside drive, to manufacture

New Detroit Service Station Opened



CHICAGO Pneumatic Tool Co., Chicago Pneumatic building, 6 East Forty-fourth street, New York, has completed a service station for the Detroit district at 570 East Larned street, Detroit. The new 2-story unit has a frontage of 75 feet, and floor space of 12,000 square feet. The east half of the first floor serves as a warehouse for compressors, engines and other heavy machinery, and the west half houses parts storage, a soundproof test room, a 35-foot repair bench and shipping and receiving benches. The office occupies the front half of the second floor, the remainder being devoted to storage of complete tools. This building is one of 20 similarly equipped and stocked service stations maintained by the company in important centers throughout the United States.

and deal in scales, coffee grinding machines and meat choppers.

PHILADELPHIA—Wheeling Corrugating Co., Wheeling, W. Va., advises that a new warehouse will be erected at Briscol and Third streets at once. New unit will have 70,000 square feet of floor space. Company makes sheet steel and wire products, building materials and household metalware.

SUNBURY—Savidge Corp. has been incorporated with 10,000 no par shares by M. W. Trimble, to manufacture and sell nuts, bolts, metal products and devices.

New Jersey

ELIZABETHPORT — New Jersey Ship Yards Inc. has been incorporated with 1000 common shares by E. A. Vosseler, 200 Broadway, New York.

HILLSIDE—Lubrication Machinery Corp. of America has been formed here by Joseph W. Woodruff, to deal in devices and appliances for use in the lubrication of automobiles and machinery. Offices are at 854 Salem avenue.

HOBOKEN—Instrument Service Co. Inc. has been incorporated with 500 common shares by Stephen K. Sullivan Jr., to manufacture motors.

JERSEY CITY — Porlbeck Metal Crafts Inc. has been incorporated with $25,000 capital by Francis A. Castellano, West New York, N. J., to make metal products.

NEWARK—M. & H. Machinery & Engineering Co., recently organized, care of A. W. Neuscheler, 40 Clinton street, plans construction of a plant and shop at Lockwood street and Euclid avenue, where a site has been acquired. Cost is estimated at $40,000.

Ohio

BASCOM—Gem Mfg. Co., J. G. Haugh manager, is considering plant expansion which will add 10,000 square feet of floor space, to be ready for occupancy about Jan. 1. Plans have been prepared.

BELLEVUE—Bellevue Mfg. Co., recently noted as having suffered damage by fire, advises through J. F. Martin that units will be replaced at once and will be equipped with direct motor-driven machinery. Company makes trunk racks for automobiles. (Noted Oct. 23.)

DAYTON—Schieble Toy & Novelty Co., Bainbridge street and Pennsylvania railroad, has awarded contract to Charles H. Shook Inc., Third National Bank building, for a 5-story plant addition at Third and Bainbridge streets, and for alterations. Geyer & Neuffer, Ludlow Arcade building, are architects.

DOVER—City council proposes to add a new turbine and one or two new boilers to the municipal light and power plant in 1931.

FOSTORIA—Fostoria Screw Co., manufacturer of screw machine products, advises through L. W. Karg, general manager, that building program recently noted is to be completed Jan. 15, and as conditions warrant, additional equipment will be added. (Noted Oct. 30.)

NILES—Plant of the Niles Corrugating Co. recently was damaged by fire which followed an explosion. Loss is estimated at $30,000, partially covered by insurance.

PORTSMOUTH — City may establish a municipal light and power plant, issue to be decided at November election.

ST. MARYS—City has received lowest bid from G. J. Meckstroth for construction of a new boiler and pumping unit for the municipal light plant. Approximate cost, $20,000.

Indiana

FT. WAYNE—Charles A. McGonagle, superintendent of the state school for feeble-minded, has requested a budget of $130,000 for the construction of a power plant.

Michigan

DETROIT — Department of street railways proposes to build an electric coach building on Coolidge highway.

DETROIT — Metallic Casket Co., Springfield, O., will build a warehouse, to include showroom, on West Alexandria avenue. H. Jerome Darling, 2524 First National Bank building, architect, has closed bids.

LANSING—Harvey E. and Ira B. McLean may establish a plant for the manufacture of an electric brake for automotive trailers, patent for which has been applied for.

LANSING—Britten Light & Power Co. has been incorporated with $50,000 capital by Harry D. Hubbard, attorney, to develop and manufacture a device invented by C. J. Britten, Charlotte, Mich.

MARSHALL—General Steel Products Co., manufacturer of steel electric welded truck bodies, advises that plant facilities recently noted as acquired cover 5000 square feet of floor space. No machinery will be needed at present. (Noted Oct. 30.)

PONTIAC — Consumers Power Co., Jackson, Mich., has plans for an equipment plant to be built here.

PONTIAC—National Foundry will start operations about Dec. 1 with 200 men. Old plant of the Eaton Axle & Spring Co. is now bing remodeled for the manufacture of pipe and manhole covers. Beresford Boate is plant superintendent.

Illinois

BLOOMINGTON—Keiser Van Leer Co., M. L. Van Leer president, will build a 2-story manufacturing, shipping and storage building on Robinson street. Estimated cost, $50,000. Company manufactures machinists tools.

CHICAGO—Globe Mfg. Co., 836 West Thirty-sixth street, has awarded contract for a 2-story addition, 80 x 140 feet, for the manufacture of garage equipment. C. A. Schantz, First National Bank building, is architect.

CHICAGO—Chicago & North Western railroad, 400 West Madison street, proposes to increase warehouse facilities by means of an expenditure of $2,000,000.

CHICAGO—Quam & Nichols Co., 1410 West Fifty-ninth street, manufacturer of radio parts and air filters, has leased a site comprising 15,000 square feet, for expansion.

CHICAGO—Clayton Mark & Co., 20 North Wacker drive, manufacturers of pipe and tubing, have leased a site of 25,000 square feet in the Central manufacturing district, in properties of the Ashland Industries Corp., for future expansion.

CHICAGO—Clements Mfg. Co., 601 Fulton street, has arranged to locate in the Clearing district, at Sixty-sixth place and Narragansett avenue. A plant with 21,000 square feet of floor space is to be completed by January. Company manufactures industrial cleaning equipment and ventilators.

CHICAGO—Utilities Gas & Electric Co., 22 West Monroe street, Byron T. Gifford president, will erect 12 butane gas plants, ten to be completed by Jan. 1. Plants are to be located at Tomah and Waupaca, Wis.; Hastings, Minn.; Eldorado, Metropolis and Vandalia, Ill.; Fulton, Ky.; Murfreesboro, Union City and Shelbyville, Tenn.; Gaffney, S. C. and Gainesville, Ga. Total estimated cost, $1,200,000.

NORTH CHICAGO—Star Nipple Co., manufacturer of pipe nipples, will erect a plant at a cost of about $50,000. Contract for design and construction is held by the Austin Co., 16112 Euclid avenue, Cleveland.

Southern States

BIRMINGHAM, ALA.—W. M. Smith & Co., 3601 First avenue north, is reported to be inquiring for a belt-driven air compressor, 1000 to 1500 cubic feet, developing 110 to 120 pounds pressure.

ENSLEY, ALA.—Tipple and mechanical facilities of the Birmingham Slag Co., Comer building, Birmingham, Ala., at Village creek and Tenth street, recently were damaged by fire. Loss is estimated at $60,000.

MONTGOMERY, ALA.—Capt. Murdock McFadden, construction quartermaster in charge, Maxwell field, will soon let contracts for four hangars and two air corps shop buildings and other units. Total expenditure for building, $1,500,000. Expenditure for adding to field, $200,000. (Noted Oct. 16.)

WILMINGTON, DEL.—Food Products Machinery Corp. has been incorporated with $185,000 and 1500 common shares by Franklin L. Mettler.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Nov. 18 for motor-driven precision lathe, motor-driven universal

milling machine, electric molder, patternmakers lathe, electric tenoner, power-driven rod and dowel machine, engine lathe, pipe threading machine and tinsmith machine.

MIAMI, FLA.—General Motors Corp., General Motors building, Detroit, will establish a testing station at LeJeune road and Seventh street, site for which has been acquired. Materials to be tested include metals and parts.

ATLANTA, GA.—Austin Bros. Bridge Co., 1195 Mickelberry avenue southwest, has acquired the business of R. C. Lieb, and will expand production facilities.

FITZGERALD, GA.—Seabrook Motor Co. has been incorporated with $100,000 capital by J. L. Perry, to manufacture a patented motor.

BATON ROUGE, LA.—Baton Rouge Electric Works proposes to erect an 85 x 150-foot plant, to include facilities for the repair of armatures.

NEW ORLEANS—Gulf, Mobile & Northern railroad, Mobile, Ala., is having plans prepared for a terminal here, to cost approximately $1,250,000. Roundhouse, car repair shop, and machine shop for the repair of locomotives are included in the plans. L. P. O. Exley is chief engineer of the railroad.

SLIDELL, LA.—Canulette Shipbuilding Co., A. D. Canulette president, has started preliminary construction for a steel fabricating unit addition, 40 x 140 feet, to house cranes and other machinery. Cost is estimated at $35,000.

BALTIMORE—Caroline Foundry Co., 723 South Caroline street, has closed bids for the construction of a 3-story foundry. W. S. Austin, Maryland Trust building, is consulting engineer.

CHARLOTTE, N. C.—Plant of the Charlotte Pipe & Foundry Co., Dowd road, recently was virtually destroyed by fire.

CHARLOTTE, N. C. — American Hardware Equipment Co. has been incorporated with $100,000 capital by Charles Nichols, 9 West Caldwell street, to make hardware equipment.

AIKEN CITY, S. C.—City council is considering the installation of diesel engine units and auxiliary equipment at the municipal pumping station.

GREENVILLE, S. C. — Southern Shuttles Inc. has been incorporated with $50,000 capital by Louis B. Batson, president, and has leased space in a portion of the plant of Steel Heddle Mfg. Co., East McBee avenue.

ALAMO, TENN.—W. R. Boling proposes to develop a commercial airport here. Site has been selected.

NASHVILLE, TENN.—City will increase capacity of municipal waterworks with new equipment, boosting output from 28,000,000 to 40,000,000 gallons. Dr. J. W. Bauman is commissioner of waterworks. Total expenditure is estimated at $450,000.

PORTSMOUTH, VA.—Carson Casting Co., 216 Columbia street, has been organized to operate a foundry for the production of brass and aluminum castings. J. M. Carson is manager.

BERKELEY SPRINGS, W. VA.—Berkeley Springs Industries Inc. has been formed with Jack Hunter as president, primarily to manufacture soft drinks. In addition, company will make dispensing equipment. Plant, 145 x 195 feet, costing $40,000, is planned. Machinery will cost approximately $50,000.

Missouri

KANSAS CITY—W. C. Wiedenmann & Sons, 1820 Harrison street, manufacturers of sheet metal products, have acquired property adjoining their plant for future expansion. Maturity is indefinite.

MEXICO—City council is considering development of a municipal airport. Site of 240 acres has been selected.

ST. LOUIS—Spike Aircraft Corp. has been incorporated by Emory Saladin, 5736 Waterman avenue.

ST. LOUIS—Century Electric Co., 1806 Pine street, has awarded contracts for a plant addition. Company manufactures electric motors.

Arkansas

ROGERS—Cloark Mines Corp. has been incorporated with $100,000 capital by Joseph DeRose and R. M. Coyle, to develop mines near here.

Oklahoma

HOLLIS—City is in the market for one 250-gallons per minute, 225-foot head centrifugal pump.

TULSA — A.B.C. Mfg. & Machine Works has been organized with A.B.C. Dague as manager, and has leased space at Third and Franklin avenue.

Wisconsin

MILWAUKEE — Milwaukee Parts Corp., 271 First avenue, plans to expand its plant for quantity production of an aircraft engine, and has increased its capital stock from $53,000 to $150,000.

MILWAUKEE—Terminal Warehouse Co., E. D. Fryer president, 100 West Seeboth street, proposes to build a 5-story warehouse addition, 62 x 120 feet, at a cost of approximately $250,000. Plans are by Moores & Dunford, 110 East Forty-second street.

PORT WASHINGTON — Milwaukee Electric Railway & Light Co., 217 Michigan street, proposes to build a steam operated power plant here and has arranged for harbor improvements to allow coal handling facilities.

WAUKESHA—Spring City Foundry Co., William J. Grede president, 901 West St. Paul avenue, recently noted as planning a plant addition, will erect a 3-story cupola building, 30 x 80 feet, and a 1-story wing, 40 x 70 feet. Cost is estimated at $50,000. Frank D. Chase Inc., 720 North Michigan avenue, Chicago, is in charge of construction. (Noted Oct. 16.)

Minnesota

NORTHFIELD—City council will build a municipal light and power plant. Preliminary plans are under way, prepared by Burns & McDonnell, Interstate building, Kansas City, Mo.

Iowa

COUNCIL BLUFFS — Five hangar units at the municipal airport recently were virtually destroyed by fire.

DENISON—City council is planning the installation of a diesel engine unit and auxiliary equipment at the municipal light plant. W. E. Schwab, Iowa City, Iowa, is engineer.

DES MOINES—City council has selected a site for a municipal airport. Expenditure of $200,000 is proposed.

Nebraska

HASTINGS—Municipal water and light department has approved plans for an addition to the municipal water and light plant. Cost, with equipment, is estimated at $35,000.

LINCOLN—Lincoln Metal Products Co., recently organized, will operate a plant costing about $50,000 for the production of solder, babbitt metal and other products.

Montana

BUTTE — National Parks Airways Inc., Alfred Frank president, will construct a hangar unit at the local airport.

GREAT FALLS—Great Northern railroad, St. Paul, Minn., has plans for a power plant here, to cost about $85,000.

POLSON—Rocky Mountain Power Co., Helena, Mont., has started building units here, including a machine shop, in connection with the construction of a proposed hydroelectric plant on the Flathead river. Cost of the entire project is estimated at $10,000,000.

Wyoming

LUCERNE—Lucerne Irrigation district plans to purchase pumping and other equipment in connection with an irrigation project. Cost is estimated at $45,000.

Utah

MT. PLEASANT—City proposes to construct a hydroelectric plant at a cost of about $40,000. Caldwell & Richards, Templeton building, Salt Lake City, Utah, are engineers.

Pacific Coast

LOS ANGELES—Machine shop of the Los Angeles Shipbuilding & Drydock Co., Smith's island, recently was damaged by fire. Estimated loss, $5000.

LOS ANGELES—Rheem Mfg. Co., Emeryville, Calif., manufacturer of tanks, will build a 1-story plant, 210 x 400 feet, at Firestone boulevard and Rheem avenue, at a cost of about $100,000. Meyer & Holler, Wright-Callendar building, Los Angeles, architects, are receiving bids.

ONTARIO, CALIF.—Edison Electric Appliance Co., 5660 West Taylor street, Chicago, will build a 150 x 180-foot addition here at a cost of $250,000 as a part of expansion program. Unit will be used for the manufacture of electric ranges and appliances. (Noted July 17.)

SPOKANE—City council has authorized expenditure of $60,000 for buildings, equipment and improvements at the municipal airport.

Dominion of Canada

VICTORIA, B. C.—Chamber of commerce is considering the establishment of a hydroplane base in Victoria harbor.

WINNIPEG, MAN.—Manitoba Rolling Mills Co. Ltd. is reported to be planning a plant addition for rerolling rails into reinforcing steel and industrial rails. Approximate cost, $100,000.

FT. WILLIAM, ONT.—Ontario hydroelectric commission, Toronto, Ont., will add an 18,000-horsepower unit at Alexander Landing. Maturity is indefinite.

HAMILTON, ONT.—Steel Co. of Canada Ltd. is reported to plan an expansion program, including plant additions and installation of equipment. Total estimated cost, $1,500,000. H. H. Champ is general manager.

NIAGARA FALLS, ONT.—Silveray Products Ltd. has been incorporated with $440,000 capital by Albert C. Taylor and Baron A. Perry, to manufacture and deal in flashlights, novelties and general brasswork.

TORONTO, ONT.—Canadian Rumely Co. Ltd., 48 Abell street, has been taken over by Alfred Davis and associates. Plant buildings containing 250,000 square feet of floor space will be augmented by addition of new manufacturing department, extending the operations of the company as general foundry, machine shop and implement manufacturing business.

WALKERVILLE, ONT.—Sho-Well Display Co. Ltd. has been incorporated with $40,000 capital by Albert St. Aubin, Detroit Realty building, to manufacture and deal in metal products and composition materials.

MONTREAL, QUE.—Reliance Railway Appliance Co. Ltd. has been incorporated with 40,000 no par shares by P. J. W. Glasgow, 1227 Sherbank street west.

MONTREAL, QUE.—Thermodaire & Refrigeration Ltd. has been incorporated with $150,000 and 100,000 no par shares by E. W. Westover, 132 St. James street west, to manufacture and deal in heating and refrigerating apparatus, machinery and appliances.

New Trade Publications

MICRO-METALLOGRAPH—E. Leitz Inc., New York, has issued a catalog of its metallographic equipment. Late developments in this class of equipment for studying metals are included.

PLATING BARRELS—A bulletin by the Hanson-Van Winkle-Munning Co., Matawan, N. J., covers plating barrels of the Mercil type. Illustrations show construction and details.

CONVEYOR OVENS—A current bulletin by the Despatch Oven Co., Minneapolis, describes and illustrates its continuous conveyor ovens, of elevated and tunnel type for baking and drying processes.

COATING TANKS—H. O. Swoboda Inc., Pittsburgh, has issued a booklet on its electrically heated vertical large coating tanks for asphalt, tars, oils and similar substances. It is illustrated with diagrams and halftones.

RUST PREVENTIVE—A compound to be applied to steelwork to prevent rusting is featured by the Skybrite Co., Cleveland. It is of water consistency and applied to surfaces by spray or brush.

STEEL CASTINGS—Completion of its new plant for production of electric steel castings is announced by the Kay-Brunner Steel Products Inc., Los Angeles, in a bulletin showing views of various parts of the plant.

VENTILATION—Installation of proper ventilation for a science building, disposing of fumes, is told in a bulletin by the American Rolling Mill Co., Middletown, O. To protect against corrosion by acid fumes the company's ingot iron was used.

ELECTRICAL APPLIANCES—General Electric Co., Schenectady, N. Y., has issued a number of bulletins recently, including: Welding electrodes; heat treatment of steel in electric furnaces; conveyor furnace; air-draw furnace; phase protective panels; direct-heat electric furnaces; low-speed synchronous motors.

TRANSFORMERS — A six-range, metal-clad portable current transformer is described in a current bulletin by the Esterline-Angus Co., Indianapolis. Illustrations and charts supplement the text.

GASOLINE LOCOMOTIVES—Brookville Locomotive Co., Brookville, Pa., has for distribution a bulletin illustrating and describing industrial locomotives, powered by Ford motors. Features of design and illustrations of typical uses are included.

NONFERROUS ALLOYS—A loose-leaf booklet on standard nonferrous casting alloys has been issued by William H. Barr Inc., Buffalo. It contains accurate information and is designed primarily as a reference for engineers and machine designers.

RUSTLESS STEELS—Samuel Osborn & Co. Ltd., Sheffield, Eng., has issued a series of catalogs on its various grades of rustless and acid-resisting steels and irons. They include applications, manipulation, physical properties and mechanical properties.

DIE HEADS—A bulletin describing its stationary pipe, casing, drill pipe, line pipe and tubing die heads has been issued by the Landis Machine Co., Waynesboro, Pa. These heads are used on the company's pipe threading and cutting off machines and are applicable also to other makes of pipe machines.

PICKLING EQUIPMENT—Weaver Bros. Co., Adrian, Mich., has issued a catalog of its pickling supplies and equipment for use in metal departments. It covers the history of the company and its facilities and a section is devoted to the technic of pickling.

POWER PRESSES—Waterbury Farrell Foundry & Machine Co., Waterbury, Conn., has issued a catalog of its power presses and other cutting-up shop machinery. It is of interest to manufacturers of pressed metal products. A wide variety of presses is covered, with ample data on each.

PATTERNS—Bryant Pattern & Mfg. Co., Windsor, Ontario, has printed a folder as an introductory message describing services offered by the company in wood and metal patterns, nonferrous castings, and general machine work on dies, jigs, fixtures and special machines.

STEEL—A handbook of its stocks of steel has been prepared by Horace T. Potts & Co., Philadelphia, warehousemen for 115 years. This is the seventeenth edition. It covers sizes carried in stock, with price extras, weights and general information of interest to workers of steel.

METAL CLEANERS — Processes, methods and materials, with practical suggestions for their use in the cleaning of metals are described in a booklet issued by the Magnus Chemical Co., Garwood, N. J. It emphasizes the importance of cleaning operations in the metal industries. It is intended to be a handbook for reference purposes to supplement the service of the company in solving cleaning problems. The text goes into cleaning technic and illustrations are profuse.